McDonald, Morgan (2023) *Trauma informed cardiac care.* D Clin Psy thesis.

https://theses.gla.ac.uk/83843/

Trauma Informed Cardiac Care

Morgan McDonald (BSc, MSc)

Submitted in partial fulfilment of the requirements for the degree of
Doctorate in Clinical Psychology

School of Health and Wellbeing
College of Medical, Veterinary and Life Sciences
University of Glasgow

April 2023

Table of Contents

List of Tables

List of Figures

Acknowledgements

Firstly, I would like to thank the individuals who participated in this project for volunteering their time and sharing their experience with me despite being in busy roles.

I would also like to thank Dr Naomi White, Dr Hamish McLeod, Dr Melanie Gallagher and Dr Sheraz Ahmed, who have all supervised this project and supported me through this research process. I would also like to thank Dr Lynda Russell (and her cats) for her role as research advisor and the support she has given throughout my Doctorate experience. Thank you to Paul Cannon for your expertise in Systematic Review and to Emma-Jane Gault who acted as study sponsor and supported me through the ethics procedures.

I cannot thank my friends and family enough for supporting me through this process from Undergraduate to Doctorate. It has been a long journey and without you I would not have got this far. I have appreciated all your support from encouragement to keep going to joining me on adventures; I am very excited for what the future holds. Even though they cannot read this, I have to acknowledge my dogs, Daisy and Luna, who have provided endless cuddles and welcome distractions as needed and I cannot wait to spend more time outside with them both again!

Chapter 1

The prevalence of cardiac related post-traumatic stress symptoms in significant others of cardiac patients: A systematic review of the literature.

Prepared in accordance with the author requirements for The Journal of
Clinical Psychology in Medical Settings
https://www.springer.com/journal/10880/submission-guidelines

Abstract

Partners of cardiac patients may be at risk of developing Post Traumatic Stress Disorder (PTSD) after their partner’s cardiac event. As partners are often primary caregivers, this may play an important part in patient adjustment and treatment of cardiac disorders if PTSD symptoms impact on partners ability to fulfil this role. This review aims to determine what the published literature indicates as the rate of PTSS and PTSD in partners of people who have had cardiac events. It also aims to examine any predictors that distinguish those who develop PTSS and PTSD compared to those who do not. An electronic search of five databases was performed and 11 eligible studies were identified, and quality assessed. A narrative synthesis was carried out and this review identified eleven factors which may aid the identification of partners of cardiac patients who may be more vulnerable to developing PTSD. Limitation of the evidence base, implications for clinical practice and future research suggestions are also discussed.

Introduction

A previous systematic review focusing on the impact of acute cardiac events on partners of patients (Randall et al., 2009) showed that partners are at significant risk of experiencing distress, anxiety, and depression. It also noted that these impacts may continue past the patient's immediate recovery phase as partners can experience disruption to daily and relationship functioning due to caregiving responsibilities and a lack of social support and information.

Studies have shown that approximately 12% of patients who experience an acute coronary event develop Post-Traumatic Stress Disorder (PTSD; Edmondson et al., 2012). However, the most recent DSM-5 PTSD criteria changes indicate that exposure to actual or threatened death through "witnessing, in person, the event as it occurred to others or learning that the traumatic event occurred to a close family member or close friend" may meet criteria for a traumatic event. Therefore, partners of cardiac patients may be at risk of developing PTSD.

It has been suggested that partners of cardiac patients might be highly susceptible to developing Cardiac Disease Induced-PTSD (CDI-PTSD; Vilchinsky et al., 2017). Partners may be vulnerable to developing CDI-PTSD as they may witness the cardiac event, CPR or treatments; these factors have been shown to increase risk of PTSD symptoms as they may cause partners to feel they have less power and control in these situations (Brinkrolf et al., 2021). One study showed higher rates of CDI-Post Traumatic Stress Symptoms (CDI-PTSS) in partners compared to patients (Fait et al., 2016). The cognitive model of PTSD (Ehlers & Clark, 2000) may explain this as a prolonged risk of life threat has been shown to predict more PTSD symptoms in partners (Boersma-van Dam et al., 2020). As partners are often the individual closest to the patient, they are often involved in ongoing emotional and behavioural support, and therefore may have more focus on threats post cardiac events. Social support is a recognised predicter of PTSD symptoms (Zalta et al., 2021) and it may be suggested that partners may perceive less social support due to services focusing on patient recovery, a lack of awareness in society of the impact of events on partners alongside caring responsibilities to the patient.

This may play an important role in patient adjustment and treatment for cardiac disorders if partners of cardiac patient's experience of CDI-PTSD reduces their ability to be primary caregivers. A review into the psychological impact on family members of critically ill patients in Intensive Care Units suggested that staff having an increased awareness of the psychological difficulties in this population may help to improve outcomes of family caregivers by providing more support, education, and mental health referrals (Johnson et al., 2019).

To date there has not been a systematic review of the literature of prevalence of PTSD or Post-traumatic Stress Symptoms (PTSS) in partners of cardiac patients and it has been suggested that this could be a potentially overlooked and underdiagnosed population (Fait et al., 2016). Vilchinsky et al. (2017) concluded that there was a lack of information regarding rates, predictors and management of CDI-PTSD among patient's caregivers. For cardiac services to provide quality care for both patients and partners, more information is required on prevalence and potential factors associated with the development of PTSS in significant others after a cardiac experience. Therefore, there remains a need for the literature pertaining to the prevalence of presentations from PTSS through to full PTSD diagnosis in this population to be reviewed in relation to its quality and the findings summarised.

Aims

To determine what the published literature indicates as the rate of PTSS and PTSD in partners of people who have had cardiac events.

To examine any correlates or predictors that distinguish those who develop PTSS and PTSD compared to those who do not.

The results will be used to make recommendations for service development and future research in this area.

Methods

This systematic review follows 'Preferred Reporting Items for Systematic Reviews and Meta-analyses' guidelines (PRISMA; Moher et al. 2009).

The scope of this review was defined based on the Condition, Context, Population (CoCoPop) framework (Munn et al., 2015), as follows:

Condition: PTSS
Context: All Cardiac Presentations
Population: Partners/family/relatives/significant others of Cardiac Patients

Eligibility Criteria:

Included studies had to meet the following eligibility criteria:

- Written in English
- Published in a peer reviewed journal
- Quantitative or mixed method studies
- Study reports family/partners/significant others data on PTSS or PTSD or CDI-PTSD
- Data specifically focused on trauma in relation to cardiac experiences

Review papers and studies focused solely on patient experiences were excluded.

Information Sources, Search Strategy and Study Selection

Scoping searches were conducted to refine search terms and key papers identified in scoping were noted. The search strategy (Appendix 1) was adapted from previous relevant studies (Vilchinsky et al.,2017; McPeake et al., 2019) and included terms related to psychological trauma, cardiac events, and significant others. The search strategy was reviewed by a librarian and a PRISMA flow diagram details the full search strategies (Figure 1). The sensitivity of the search strategy was evaluated by its ability to detect the key papers. The reference lists of all included articles were also checked for any further relevant articles and forward and backward citation searching was completed. Five databases, on three different platforms, were searched in March 2023: MEDLINE (EBSCOhost; 1946 to present), Embase (Ovid; 1947 to present), PsycInfo (EBSCOhost; 1967 to present), CINAHL (EBSCOhost; 1980 to present), Cochrane Library – CENTRAL and the search strategy was adapted for implementation on all five databases.

Search results were transferred into EndNote and duplicates were removed. Titles and/or abstracts were screened for eligibility then the full text was read for all records identified as "maybe eligible" at the title/abstract screening stage. Ten percent of articles from the electronic search were screened for eligibility by a second reviewer. There were no disagreements in eligibility decisions between the lead and second reviewer.

Data Collection

An extraction template in a Microsoft Word document was used to gather the following information from included papers: Prevalence data, general characteristics (e.g. sample size and type of cardiac experience), diagnostic criteria for PTS Symptoms (e.g. measures used, co-morbidities) and potential factors associated with traumatic reactions (e.g. gender, age, social support, history of psychological illness).

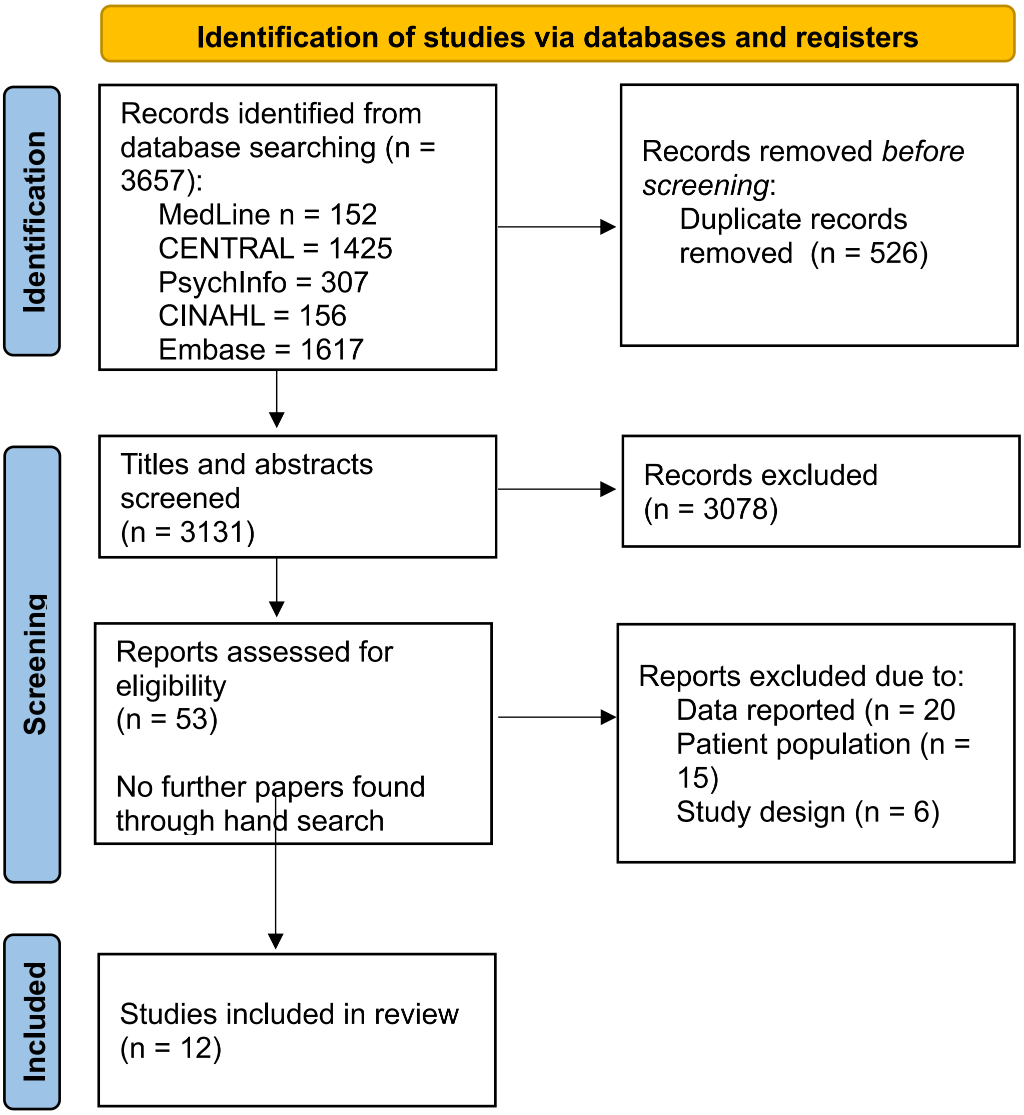
Rating of Methodological Quality

The National Heart, Lung, and Blood Institute (NHLBI) Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies was used to assess the quality of included papers. This tool is designed to focus on the key concepts of critical appraisal of internal validity and bias. This tool consists of 14 items, each of which could be marked as: Yes, No, Not Applicable or Not Reported. This was used to guide the overall rating for the quality of each study as Good, Fair or Poor. As this review is interested in prevalence, consideration was made into whether samples were either representative or well characterised enough to determine whether any prevalence estimates might be biased. Three papers (25%) were randomly assigned for independent appraisal by a second reviewer to assess inter-rater reliability. Any score discrepancies were resolved through discussion between the reviewers using the guidance document.

Synthesis

A narrative synthesis was deemed the most suitable method of synthesising the data; due to the heterogeneity of results, meta-analysis and meta-regression were not feasible. Data was narratively synthesised using recommended guidelines (Popay et al., 2006), which involved developing a preliminary synthesis of the findings from included studies, exploring relationships in the data, and assessing the strength of the evidence. This is described alongside a critical appraisal of bias ratings using the NHLBI Quality Assessment Tool.

Figure 1: PRISMA Flow Diagram



Results

This systematic review identified 11 relevant studies using the exclusion and inclusion criteria listed above. Two papers are combined for the analysis (Bunzel et al., 2005 and 2008) as they used the same data for each study.

Study and Sample Characteristics

Table 1 provides an overview of synthesised key information from included studies relevant to the review questions.

There is a significant range in sample sizes between the papers from 21 – 190 participants. All samples were majority female. Nine papers reported on the age of the samples, one paper reported a median age of 57, two papers reported 51% of the sample being under 50 years old, and six papers reported mean age between 48.7 and 61.2 years. Ethnicity of the samples were only reported in three papers, and all had high proportions of white/Caucasian participants at between 88 and 94.7% (Dew et al., 2004; Presciutti et al., 2022; Stukas et al., 1999). Socioeconomic status was reported in five papers by rates of income above or below average, and all had higher proportions of participants on average or high incomes than lower incomes (Dew et al., 2004; Eisenberg et al., 2022; Fait et al., 2016; Presciutti et al., 2022; Stukas et al., 1999). A range of cardiac presentations were reported amongst the papers including coronary event/arrest, cardiac event/arrest, left ventricular assist device, heart transplant and cardiac disease.

Methodological Quality Appraisal

Assessment of methodological quality of included papers is illustrated in Table 2. The decision to exclude or include papers was made through specific consideration of the risk of bias concerns that were highlighted though the quality appraisal process.

All studies clearly stated their research question or objective and defined their study population. Two papers reported sampling methods that may be at risk of bias, with one using convenience sampling (Presciutti et al., 2022) and the other only included 51% of the possible sample due to their inclusion/exclusion criteria (Zimmerli et al., 2014). Participation rate was below 50% in six papers and one paper failed to report this rate (Armand et al., 2022) and therefore it is unclear if these samples were representative. All included studies failed to provide sample size justification, with no study reporting a sample size power calculation, however Zimmerli and colleagues (2014) reported in their limitations that the study had low power.

In relation to all the subjects being selected or recruited from the same or similar populations the NHLBI quality assessment tool specifies this includes the same time period. All of the papers used the same population however there was a significant range in the length of the recruitment period post cardiac event. Eight papers had recruitment periods between 32 months (Armand et al., 2022) and 10 years (Bunzel et al., 2005 & 2008). One paper recruited over a 43 month period however all participants were at the same timepoint post cardiac event (van't Wout Hofland et al., 2018). Of the included studies, three papers used samples recruited from the same time period (Cornelius et al., 2020; Fait et al., 2014; Presciuti et al., 2022). Fait et al (2014) contacted participants who had received intensive cardiac care over an 8 month period but participants were recruited at the same time point. It may be predicted that PTSS rates may differ significantly over a 10 year period post cardiac event, therefore the variation in the recruitment time periods may impact the rates of PTSS reported.

All studies reported effect sizes. In relation to the exposure of interest being measured prior to the outcomes being measured, only three of the studies allowed for a baseline to be measured (Brouwers et al., 2015; Cornelius et al., 2020; Eisenberg et al., 2022) however this was still after the exposure to the cardiac event. The timeframe was sufficient to see an association between exposure and outcome for all the papers however, studies recruiting long periods after the event may not have captured PTSD symptoms which have since recovered. None of the papers measured the level of exposure specifically to the traumatic event and exposure was implied through the nature of being a significant other. However, three papers looked at possible factors which may increase a partner's exposure to a traumatic event; both Cornelius and colleagues (2020) and Fait and colleagues (2016) assessed the impact of being present for the cardiac event and the ambulance ride to hospital. Fait et al (2016) and van't Wout Hofland et al (2018) assessed the impact of witnessing or giving CPR.

Six papers assessed PTSD symptoms over multiple timepoints. Of these studies only two papers reported a loss to follow-up of 20% or less (Armand et al., 2022; Eisenberg et al., 2022). A range of outcome measures were used and all the included papers clearly defined these, used valid and reliable measures, and implemented these consistently across all study participants. None of the papers reported outcome assessors being blinded to the exposure status of participants however Cornelius and colleagues (2020) noted that the assessors were blind to the hypothesis of the study.

Of the 11 included papers only three papers did not report on potential confounding variables. There were a range of variable reported in the remaining papers which will be discussed in the outcome section below.

Table One: Data Extraction Table

	Prevalence Data for PTSD	**Sample Characteristics of Partners**	**Emotional Closeness**	**Cardiac Presentation**	**Diagnostic Criteria for PTS**	**Timepoint of Assessment**	**Co-Morbidities**	**Factors Associated**
Armand et al., 2022	Patient vs Partner Severe PTSD (IES>26) 3mths: 26% vs 48% 1year: 28% vs 45% Median IES: 33	85 partners 12% male Median age 57	80 spouse	Cardiac event	IOES-R	3 weeks, 3 months and 1 year		No significant effect for age for patient or partner. Higher acute traumatic stress severity is significantly positively associated with higher PTSD symptom severity at 3 months and 1 year. Strongest association for women compared with men. Acute traumatic stress was higher in women compared with men.
Brouwers et al., 2015	Patient vs Partners PTS Data Baseline: 21% vs 12%; 3mth: 21% vs 12%; 6mth: 9% vs 14%;	33 patient-partner dyads Gender: 9 Male Age (yrs), mean (SD): 53.6+/-10.7 Higher education: 31 Employed: 24	Partners	Left ventricular assist device	Posttraumatic Stress Diagnostic Scale	3-4wk after implantation and 3 & 6 month follow up	(HADS) Patient vs Partners Anxiety: Baseline: 23% vs. 48%, *p*=0.03 3 months: 15% vs. 44%, *p*=0.02	No correlation between use of psychotropic medication, age, gender, or duration of partner hospitalisation. Both partners and patients with Type D personality showed significantly higher levels of PTSD

		Psychotropic Medication: 8					6 months: 15% vs. 26%; *p*=0.43 Patient vs Partners Depression: Baseline: 28% and 39%, *p*=0.37 3 months: 23% vs. 32%, *p*=0.48 6months: 5% vs. 23%, *p*=0.15	
Bunzel et al., 2005 &2008	6 (23%) of partners met criteria for PTSD (0% patients) Partners sig. higher values in all dimensions of IES-R than	N=27 (2005)/21 (2008) partners 25 (2005) & 20 (2008) female	Partners	Mechanical Assist Device Followed by Heart Transplantation	IOES-R	2005: 37 to 95 months after implantation 2008: 6-134 months after heart transplant	(HADS) 2005: Patient v Partner - Anxiety: 4% v 23% Depression (mild to moderate): 2% v 19%	Fears and concerns regarding procedure (8 questions): 1-2 = 14% 3-4 = 28% 5+ = 56% Partners more concerned about the possible risk of stroke and pain due to device than patients.

	patients except intrusion.						2008: 29% mild to moderate depression and 35% mild to moderate anxiety. Significant difference between patients and partners (partners higher)	All partners with PTSD symptoms were female.
Cornelius et al, 2020	PSS at follow up (means): Not present for event (n = 26): 8.9 Present during ambulance ride (n = 66): 9.5 Present but not during ambulance ride (n = 14): 4.1	156 couples 91.7% male patient female partner 60% present for ambulance ride 28% not present. 12% present but not for ambulance ride 57% present for initial care at hospital	Partners	Acute Coronary Event	Posttraumatic diagnostic scale – DSM-5	From 2 months post discharge	(HADS) Female partners anxiety and PTSS levels lower than male partners.	No significant effect of presence during cardiac event or ambulance ride to hospital on PSS. Partners present during the event but not the ambulance ride had lower PSS than those present for both event and ambulance ride.

	No difference between patient and partners for PSDD.							
Dew et al., 2004	Family members with PTSD at 3 years post patient transplant: 22.5%	N = 190 14.7% male 51.1% Under 50yrs 94.7% Caucasian 59.8% high school education 93.2% married 46.2% Income lower than $25k 56.6% currently employed 46.2% professional occupation	Family members 72.1% married	Heart transplant	Composite International Diagnostic Instrument (DSM-3-R)	2, 7, 12 & 36 months post transplant	MDD: 31.6% Adjustment disorders: 35.4% GAD: 7.3% Risk MDD increased by unemployment Risk anxiety increased by younger age, low sense of personal mastery and high use of avoidance coping strategies.	PTSD occurred during first year post-transplant Risk increased: Lifetime history of psychiatric disorders Greater post-transplant caregiving responsibilities Poorer relationship with patient
Eisenberg et al., 2022	Probable CDI-PTSD diagnosis in partners:	106 Partners	Partners	Cardiac disease	PTSD scale – self report	4 and 8 months after patient	(HADS) Anxiety levels of women	Negative correlation between years of education and CDI-PTSS at 4 and 8 months.

	5.66% at 4mths after patient discharge 8.42% at 8 months after patient discharge	Mean age: 57.48 years. 88.7% married or cohabiting. Average length of relationship: 32.34 years 3.25 children on average 14.09 years of education 59.3% income equal or above average 89.3% no premorbid psychiatric history 28.3% experienced >1 traumatic event	(91.7% Male patient female partner couples)			discharged from hospital	partners (M = 5.00, SD = 3.96) significantly lower than men partners (M = 8.42, SD = 5.32), t(154) = 2.261, p = .025.	Income level was negative correlated with CDI-PTSS at 8 months. Other background variables not correlated with CDI-PTSS. Anxiety during hospitalisation significantly correlated with higher levels of CDI-PTSS at 4 & 8 months. Anxiety & depression at 4 months after hospitalisation significantly correlated with levels of CDI-PTSS at 4 & 8 months. Fear of illness progression significantly correlated with CDI-PTSS at 4 & 8 months. Social Support not significantly correlated with CDI-PTSS.

		36.8% experienced 1 traumatic event 34.9% no experience of trauma						
Fait et al., 2016	No. of symptoms patient v partner: 0= 103 (68%) v 65 (43%) 1= 28 (18.5%) v 48 (32%) 2= 11 (7.5%) v 21 (14%) 3= 6 (4%) v 13 (8.5%) 4= 3 (2%) v 4 (2.5%) (0 = no symptoms to 4	151 patient-partner dyads 9.9% male Mean age: 61.2years Mean relationship duration: 29.3yrs Mean no. children: 3.6 Mean years of education: 13.4 Income below average: 23 (15.2%)	Partner	Acute coronary event	PC-PTSD screening questionnaire	Average 4.5months after patient hospitalisation (min 2 months)	None reported	Partners experienced 3.9 times more hyper arousal and 1.8 times more re-experiencing than patients. Significant association between level of education (up to 12yrs) and CDI-PTSD No other significant associations found.

	= symptoms from all four clusters) Partners presented with more symptoms than patients.	Income average: 20 (13.2%) Income above average: 37 (24.5%) Present during patient’s experience of cardiac symptoms: 110 (72.8%) Witnessed resuscitation: 8 (0.07%)						
Presciutti et al., 2021	Positive PCL-5 screen: 18 caregivers (34.6%)	52 caregivers Mean age: 48.7 86.5% Female 88.5% white 57.7% high income	Caregiver (82.7% spousal caregiver)	Cardiac Arrest	PTSD Checklist-5	Mean months since arrest: 43.2	WHOQOL-BREF (Lower scores = lower QoL; 4-20): Physical = 16.1 Psychological = 14.7 Social = 14.1	Greater PCL-5 scores associated with worse physical and psychological QoL. Greater PCL-5 scores and less months since arrest associated with worse QoL.
Stukas et al., 1999	Recipients: 10.5% met full criteria 5% probable	142 Caregivers (158 patients) 13.6% male	Family Caregivers 85.8% married	Heart transplant	DSM-III-R criteria	12month post-transplant		Respondents with PTSD-T and more reported symptoms were significantly more likely to be/have:

	Caregivers: 7.7% met full criteria. 11% probable	94.3% white 51.1% under 50yrs old 59.1% high school education or less 90.9% married. 20% family income lower than $15K 55.7% currently employed.							Female Younger than 50yrs Personal history of psychiatric illness Lower friend support Low family cohesion Lower sense of mastery Lower income
van't Wout Hofland, et al., 2018	29% caregivers had trauma related stress	N=57 Female 89.5% Mean age: 56.9 Higher education: 47.4% Currently working: 50.8% Witnessed CPR: 49.1% Performed CPR: 50%	95% spouse Partner spouse or significant other	Cardiac Arrest (CA)	IOES-R	2years after Cardiac Arrest	HADS and Quality of Life scores did not differ significantly from general population. FAI scores significantly higher than general population:	IES score decreased significantly between 1 and 2 years after CA Significant difference between IES scores for those the witnessed CA and CPR and those that did not witness CA. No difference in IES scores for those that witnessed and performed or did not perform CPR.

							Severe fatigue = 21.1%	
Zimmerli et al., 2014	40 (40%) relatives had PTSD	N = 101 Mean age: 58.1yrs 70% female Higher education: 91% Salaried employee: 56%	Spouse 71% Parent 3% Sibling 4% Adult child 17% Other 4%	Cardiac Arrest	IOES-R	Mean time since cardiac arrest 2.6 years		Associated with PTSD: Female gender Living with patient History depression before cardiac event Perception that therapeutic measures were insufficient Long delay in family receiving prognostic information regarding patient Family conflict with ICU staff. Relatives with PTSD after Cardiac event: 33% consulted with psychologist/psychiatrist 40% prescribed psychotropic drugs

Abbreviations: IOES-R= Impact of events scale- revised, HADS = Hospital Anxiety and Depression Scale

Table 2: Factors Reported for Partners Related to PTSD/PTSS

	Factors Reported **(Effect Size)**								
	Age	**Socio-economic**	**Gender**	**Mental Health History**	**Presence**	**Greater Social Support**	**Greater Emotional Closeness**	**Other**	**Adjusted for covariates**
Armand et al., 2022	Yes (b = −0.17, SE = 0.08, 95% CI = −0.33 to −0.01, β = −0.13, adj. P = .12)	No	Yes Female (b = 8.82, SE = 3.03, 95% CI = 2.83–14.80, β = 0.23, adj. P = 0.01)	No	No	No	No	N/A	Gender, Acute IES

Brouwers et al., 2015	Yes (NR)	Yes (NR)	Yes (NR)	Yes (NR)	No	No	No	Type D personality ($F=19.45$, $p<0.0001$)	Age, gender, comorbidity, hospital duration, use of psychotropic medication
Bunzel et al., 2005 & 2008	No	No	Yes (NR)	Yes (NR)	No	No	No	N/A	NR
Cornelius et al., 2020	No	Yes (NR)	Yes (NR)	Yes (NR)	Yes Hospital drive (Wald = 9.00, df = 2, $p = 0.011$)	No	No	N/A	Patient age, income, illness severity, follow-up participation.
Dew et al., 2004	Yes <50yrs ($X^2 = 0.10$, $p>0.05$)	Yes Income <$25,000 ($X^2 = 1.12$, $p>0.05$)	Yes Male ($X^2 = 10.24$, $p<0.05$)	Yes (NR)	No	No	Yes Married ($X^2 = 2.86$, $p>0.10$)	N/A	NR

Eisenberg et al., 2022	Yes Time 2: (r (106) = 0.13, p >.05) Time 3: (r (98) = -.127, p>0.05)	Yes Income Time 2: (r (106) = -.182, p>0.05) Time 3: (r (98) = -.205, p <0.05)	Yes (NR)	Yes Time 2: (r (106) = 0.46, p>0.05) Time 3: (r (98) = -.017, p>0.05)	No	Yes Time 2: (r (106) = -.049, p>0.05) Time 3: (r (98) = -.139, p>0.05)	Yes Relationship duration Time 2: (r (106) = .074, p>0.05) Time 3: (r (98) = -.075, p>0.05)	N/A	NR
Fait et al., 2016	Yes (X^2 = 0.08, p = 0.96)	Yes (X^2 = 4.65, p = 0.1)	Yes (NR)	Yes (X^2 = 0.06, p = 0.8)	Yes (X^2 = 0.05, p = 0.82)	No	Yes (X^2 = 2.83, p = 0.24)	N/A	NR

Presciutti et al., 2021	Yes (NR)	Yes (NR)	Yes (NR)	No	No	No	No	QoL Physical: (b = −0.33, 95% CI = −0.59 to −0.05, p = .02) Psychological: (b = −0.51, 95% CI = −0.77 to −0.26, p <0.001) Social: (b = −0.35, 95% CI = −0.65 to −0.08, p = .01)	Age, Income, time since cardiac event
Stukas et al., 1999	Yes Age <50	Yes	Yes Female	Yes (X^2 = 18.32, p<0.0001)	No	Yes (X^2 = 7.33, p<0.01)	No	Sense of Mastery (X^2 = 6.55, p<0.01)	NR

	(X^2 = 1.28, p>0.05)	Family income <$15k ($X^2$ = 0.02, p<0.05)	(X^2 = 7.67, p<0.01)						
van't Wout Hofland, et al., 2018	Yes (NR)	Yes (NR)	Yes (NR)	Yes (NR)	Yes Witness (t=3.21, p=.002) Perform CPR (p= .84)	No	No	N/A	NR
Zimmerli et al., 2014	Yes (OR per decade of age 0.98, 95% CI	Yes Salaried employee (OR 3.08, 95%CI 1.34–7.04)	Yes Female (OR 2.85, 95% CI 1.09–7.50)	Yes History Depression (OR 3.25, 95% CI 1.01–10.56)	No	No	Yes Living with patient (OR 4.73, 95% CI 1.48–15.08)	Experience of ICU Longer ICU stays (OR per ICU day 1.07, 95%CI 0.98–1.16)	NR

	0.95–1.00)							conflict with ICU staff (OR 3.35, 95%CI 0.79–14.29) Perception that therapeutic measures were insufficient (OR 6.56, 95%CI 0.71–60.98)	

NR = Not reported; OR = Odds Ratio; ICU = Intensive Care Unit

<u>Table Three: Methodological Quality</u>

	Questions													
	Research question	**Study Population**		**Recruitment**	**Effect size**	**Exposure of Interest**					**Outcome Measure**	**Blinding**	**Follow up**	**Analysis**
Authors	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Armand et al., 2022	Yes	Yes	NR	Yes	Yes	No	Yes	No	No	Yes	Yes	No	Yes	Yes
Brouwers et al., 2015	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	NR	Yes
Bunzel et al., 2005 & 2008	Yes	Yes	No	No	Yes	No	Yes	No	No	No	Yes	No	NA	No
Cornelius et al., 2020	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NR	Yes
Dew et al., 2004	Yes	Yes	Yes	No	Yes	No	Yes	No	No	Yes	Yes	No	No	Yes
Eisenberg et al., 2022	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes
Fait et al., 2016	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	NA	Yes
Presciutti et al., 2022	Yes	Yes	No	No	Yes	No	Yes	No	No	No	Yes	No	NA	No
Stukas et al., 1999	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	No	No	Yes
van't Wout	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	NA	Yes

Hofland, et al., 2018														
Zimmerli et al., 2014	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	No	NA	Yes

Outcomes

PTSD Prevalence

Four studies reported rates of PTSD in partners between 22.5 and 34.6% (Bunzel et al., 2005 & 2008; Dew et al., 2004; Van't Wout Hofland et al., 2018; Presciutti et al., 2021). However, this was based on 6 participants for Bunzel et al.'s studies so these results may not be robust. Two studies reported higher rates of 40% (Zimmerli et al, 2014) and 48% (Armand et al., 2022). Three studies reported significant lower rates of PTSD symptoms between 5.66% and 14% (Eisenberg et al., 2022; Stukas et al., 1999; Brouwers et al., 2015). A number of papers only reported percentages and not actual rates in the samples, and given that some papers had small sample sizes this may be misleading. Two papers did not report percentage rates of PTSD and instead reported mean PTSD scores focused on those that were present for the event (Cornelius et al, 2022) and percentage number of PTSD symptoms (Fait et al., 2016) which made it challenging to compare these rates to rest of the papers analysed.

Four papers reported higher rates of symptoms for partners than patients (Armand et al., 2022; Bunzel et al., 2008; Fait et al., 2006; Stukas et al., 1999). Stukas et al. (1999) reported higher percentages of partners meeting probable diagnosis than full criteria, however found the opposite for patients. However, one paper reported higher rates of symptoms in patients however this did not reach significance and was based on a small sample (Brouwers et al., 2015) and one paper reported no difference between patient and partner scores (Cornelius et al., 2022).

One paper concluded that PTSD occurred during the first-year post-transplant (Dew et al., 2004) alongside another study which reported that PTSD scores decreased significantly between 1 and 2 years after Cardiac Arrest (Van't Wout Hofland et al., 2018). Armand and colleagues (2022) found that higher acute traumatic stress severity was significantly positively associated with higher PTSD symptom severity at 3 months and 1 year.

Personal Characteristics

Only 1 paper reported a significant association between age and PTSD, with more reported symptoms in partners younger than 50 years old (Stukas et al., 1999), however this study had a sample of 51% under 50 years old which may have biased this association. The majority of papers which reported age of the sample gave a range of 48.7 to 61.2 years; as incidence rates of cardiovascular disease increase from 40% in 40 to 59 year old to 75% in 60 to 79 year old (Rodgers et al., 2019); it may be suggested that the age range of samples may be representative. Four papers reported associations between being a female significant other and PTSD symptoms (Arman et al., 2022; Bunzel et al., 2005; Stukas et al., 1999; Zimmerli et al., 2014).

Brouwers and colleagues (2015) reported that those with Type D Personality showed significantly higher levels of PTSD. However, this was based on two partners and nine patients, therefore this finding may not be generalisable due to the small sample. No other papers reported on personality characteristics.

Eisenberg and colleagues (2022) reported a negative correlation between years of education at 4 and 8 months and income level at 8 months to CDI-PTSS. Fait and colleagues (2016) also reported significant association between level of education and CDI-PTSD and Stukas and colleagues (1999) reported that participants with PTSD were more likely to be on lower incomes and have lower sense of mastery.

Patient's Cardiac Presentation

There was a variation in the types of stressful cardiac events that partners were exposed to. Six papers focused on cardiac/coronary events, two focused on heart transplant, one paper focused on left ventricular assistant device (LVAD), one paper focused on patients who had an assistant device then heart transplant and one paper focused on cardiac disease. This variable is important as partners having a cardiac disease diagnosis may have a different type of experience to a partner having cardiac arrests and possibly having to administer CPR. This was represented in the included papers as the highest rates of PTSS were reported in papers focused on cardiac/coronary events (29 - 48%) and then those with heart transplant (22.5 –

26%), and lowest rates were seen in those with a LVAD fitted (12 – 14%) and cardiac disease (5.66 – 8.42%).

Social Support

Stukas and colleagues (1999) reported that participants with PTSD and more reported symptoms were more likely to have lower friend support and lower family cohesion. However, Eisenberg and colleagues (2022) reported that social support did not significantly correlate with CDI-PTSS. Both studies had good quality ratings and similar sample sizes. However, they focused on partners of different cardiac presentation with one focused on cardiac disease and the other heart transplant and both papers used different measures of PTSS, with Eisenberg et al (2022) using a self-report measure and Stukas et al (1999) using DSM-3 criteria. They also measured perceived social support using different measures, Eisenberg et al (2022) used the Cancer Perceived Agents of Social Supports Questionnaire (Goldzweig et al., 2010) which was shown to have acceptable internal validity, and Stukas et al (1999) created a summary index which had good internal validity. Therefore, it is difficult to assess which study is more reliable for this variable.

Emotional Closeness

In relation to the emotional closeness of the samples', only limited data was reported which tended to be on the type of the relationship. Seven papers specifically reported data from partners, the remaining four papers used family caregivers however rates of partners within these caregiver samples ranged from 71 - 95%. All the couples in the samples were male – female partnerships. Only two papers reported on the details of the partner relationships, Eisenberg et al (2022) reported that 88.7% were married or cohabiting, the average length of the relationships was 32.3 years and the sample had 3.3 children on average. Fait et al (2016) reported a mean relationship duration of 29.3 years and 3.6 children on average.

None of the papers reported on the effect of the relationship to the patient and its impact on PTSD symptoms. However, Dew and colleagues (2004) reported that the risk of PTSD symptoms increased when a poorer relationship with the patient was reported. Zimmerli and colleagues (2014) reported an association between PTSD and living with the patient.

Diagnosis of PTSD

The most common tool for assessing PTSD symptoms was The Impact of Events Scale - Revised with four papers using this measure. This is a short self-report questionnaire designed to measure PTSD symptoms in response to a specific traumatic event in adult populations. Throughout the papers, self-report measures were most used with three papers using the Post Traumatic Diagnostic Scale, one paper using the Primary Care PTSD Screen, one paper used The PTSD Checklist. The remaining two papers used the Composite International Diagnostic Instrument which is a diagnostic interview using DSM-3 criteria. Due to the measurement tools used in the included papers being more focused on rates of PTSS than diagnostic tools, this affects the ability of this review to report on rates of PTSD.

Time of Assessment

There was a range of PTSD assessment timeframes used. Six papers assessed their samples around the time period of their significant others cardiac event between 3 weeks and 4.5 months. Armand et al (2022) assessed people at 3 weeks with follow up at 3 months and 1 year after the cardiac event; Brouwers et al. (2015) assessed participants 3-4 weeks after their partner had a Left Ventricular Assist Device implanted, then at 3 and 6 month follow up; Dew et al (2004) assessed family members at 2, 7, 12 and 36 months post heart transplant; Cornelius et al. (2020) reported that they assessed participants from 2 months after their partner was discharged from hospital; Eisenberg et al (2022) assessed partners at 4 and 8 months after their partner was discharged from hospital; Fait et al. (2016) assessed partners on average 4.5 months after the patient was discharged from hospital however with a minimum time allowed of 2 months. The remaining 5 papers assessed participants at longer time points from their partners cardiac events. Bunzel et al (2008) had significant differences between when partners were assessed between 6 and 134 months after their partners heart transplant and this was also seen with Bunzel et al. (2005) who assessed participants between 37 and 95 months after their partners had a Mechanical Assist Device implanted. Stukas et al (1999) assessed participants at 12 months post heart transplant. Presciutti et al. (2021) reported a mean of 43.2 months, Zimmerli et al. (2014) reported 2.6 years after cardiac arrest, and van’t Wout Hofland et al. (2018) assessed at 2 years post cardiac arrest.

It may have been expected that PTSS would decrease over time for partners however the papers which reported higher rates of PTSS recruited between participants who were between up 12 months after event and 43.2 months (Armand et al., 2022; Presciutti et al., 2021; Zimmerli et al., 2018). Those with lower reported rates of PTSS recruited between 4 and 12 months (Eisenberg et al., 2022; Stukas et al., 1999).

The time period in which participants were recruited was one of the items in quality assessment which 3 studies failed on (Bunzel et al., 2005 & 2008; Dew et al., 2004; Presciutti et al, 2021) due to having significant variation within the samples of when they were assessed.

Mental Health Comorbidities

Comorbidities were also assessed in 6 studies and The Hospital Anxiety and Depression Scales (HADS) was completed in 5 of these papers. Browers et al (2015) reported that at baseline, 3 month and 6 month follow up, partners had higher rates of anxiety and depression than patients, however this difference was only significant for baseline and 3 months follow up of anxiety and based on a small sample. Bunzel et al. (2005 & 2008) also reported higher rates of both anxiety and depression in partners. Cornelius et al. (2020) and Eisenberg et al (2002) reported that female partners had significantly lower anxiety levels than male partners however 92% of the samples was female partners (P = .025). Van't Wout Hofland et al (2018) reported that HADS scores did not significantly differ from the general population. Dew et al. (2004) used the Composite International Diagnostic Instrument and found family members of heart transplant patients had increased rates of Major Depressive Disorder (32%), adjustment disorders (35%) and Generalised Anxiety Disorder (7%).

Eisenberg et al (2022) reported that anxiety during hospitalisation significantly correlated with higher levels of CDI-PTSS at 4 & 8 months and both anxiety and depression at 4 months after hospitalisation significantly correlated with levels of CDI-PTSS at 4 & 8 months.

Zimmerli and colleagues reported that of the relatives with PTSD, 33% consulted with psychologist/psychiatrist and 40% were prescribed psychotropic drugs.

One study showed that partners had more concerns than patients about risks as a result of heart transplant e.g. stroke or pain (Bunzel et al., 2008). However, no assessment of effect of this on PTSD was completed. Eisenberg et al (2002) also reported that fear of illness progression significantly correlated with CDI-PTSS at 4 & 8 months.

Previous Mental Health History

Three papers concluded that having previous mental health disorders increased partners risk of PTSD (Dew et al., 2004; Stukas et al., 1999; Zimmerli et al., 2014).

Eisenberg and Colleagues (2022) were the only paper to comment on partner's previous experience of trauma, however the relationship between this and rates of PTSD in relation to a partners cardiac event was not explored. They reported that 28.3% of their sample had experience of 1 or more traumatic events in their histories however they reported one of the lowest rates of PTSS in partners.

Presence during cardiac event

Only two papers reported on the impact of witnessing a cardiac event and the data are inconsistent. Cornelius and colleagues (2020) reported no significant effect of being present during the cardiac event or during the ambulance ride to hospital on PSS. However, they reported that partners present during the event but not the ambulance ride had lower PSS than those present for both event and ambulance ride. It is unclear from this data, the impact of being present during the ambulance ride to hospital impacts on partner PTSS.

van't Wout Hofland and colleagues (2018) reported a significant difference between Impact of Event (IES) scores for those the witnessed the cardiac arrest and CPR and those that did not witness this. However, they noted no difference in IES scores for those that performed or did not perform CPR.

Despite these papers having good quality ratings, it is unclear how being present for a cardiac event or performing CPR may impact on PTSS rates in partners.

Other factors

Zimmerli et al. (2014) reported that family members experience of the medical care of the patient was associated with PTSD including the perception that therapeutic measures were insufficient, long delay in family receiving prognostic information regarding patient and family conflict with ICU staff. Dew and colleagues (2004) reported higher risks of PTSD in those with greater post-transplant caregiving responsibilities. Greater PTSD scores were associated with worse physical and psychological Quality of Life (QoL; Presciutti et al., 2021). The authors also included that greater PTSD scores and less months since cardiac arrest were also associated with worse QoL. As each of these factors is only reported on by one paper, these should be interpreted with caution.

Discussion

This systematic review aimed to investigate rates of PTSS and PTSD in partners of people who have had cardiac events and any correlates of predictors of PTSS and PTSD in this population. However due to the scope of the data and the representativeness of the samples determination of prevalence based on the studies included may not be valid. Eleven variables were reported across the studies which may have impacted the development of prevalence rates of PTSD symptoms reported in partners, however most of these variables were only examined in single studies and so replicated effects or patterns of results across studies are rare.

Overall, the findings suggest prevalence rates between 5.7 and 48% of PTSS or PTSD in partners of patients who have experienced a cardiac event. The reported symptom prevalence estimates and the full PTSD syndrome estimates overlap due to sample characteristics and methods of assessment. Also, due to the differences between studies on how and when PTSD was assessed and these rates likely reflecting subgroups of individuals with different characteristics e.g. different types of cardiac trauma and different premorbid features inclusion mental illness, this may not be a reliable range. The large variance in PTSS prevalence was also reported for patient's, ranging between 0% to 38% (Vilchinsky et al., 2017). It can be suggested that most partners do not develop PTSD symptoms after their significant other has a cardiac event, just as has been shown after other traumatic events (King et al., 2012), however some partners may experience longer term PTSS which may impact functioning.

These reported rates are similar to the lifetime prevalence in the general population of 3.4 – 26.9% (Schein et al., 2021). These rates in the general population are also very wide however this may indicate that levels of PTSS in partners may be a result of pre-morbid trauma if measures were not specifically focused on cardiac related PTSD. The lower rates reported are comparable to those in other contexts, for example 6.5 – 8.4% of wives of veterans with PTSD also had PTSD (Solomon et al., 2021). In physical health contexts, rates of PTSS up to 30% have been reported for caregivers of cancer patients (De Padova et al., 2021) and 26% of fathers/birth partners met criteria for PTSD after witnessing a traumatic birth (Webb et al., 2021). Higher rates of PTSD in females have also been reported in previous literature (Olff, 2017). Despite the incidence of cardiovascular disease being higher in males (Gao et al., 2019), woman were over represented in samples of cardiac patients partner in the included studies and therefore rates of PTSS may be biased.

The methods used to assess PTSS in the studies analysed may affect the findings as there may be a difference between rates as assessed by self-report and clinical interview. Previous studies have suggested that self-report measures tend to be more biased which may cause inflated reporting of PTSD symptoms (Bovin & Weathers, 2012); therefore, rates assessed by a clinical interview may be more reliable. This bias should also be considered alongside the low participation and follow up rates within included papers meaning it is not clear whether samples used are representative of the population. However, it should be noted that identification through self-report is more accessible and time/cost effective way for services to manage.

It should be noted that changes to DSM-5 criteria for PTSD now states that "witnessing, in person, the event(s) as it occurred to others' or "learning that the traumatic event occurred to a close family member or close friend" (American Psychiatric Association, 2013, pp. 271) now can be considered a traumatic event which may lead to PTSD. This means that the two studies included which use DSM-3 criteria may not have assessed PTSD symptoms in partners in the same manner. It should also be considered that the measure that is most used when assessing PTSD in papers analysed is not a diagnostic tool (Impact of Event Scale- Revised) however it is commonly used in the evidence base. It was observed that the terms used to describe PTSD and PTSS varied in the literature, for example one paper reported that "PTSD was detected" (Zimmerli et al., 2014), another reported "trauma related stress" (van't Wout Hofland, et al., 2018) and another reported "posttraumatic stress symptoms" (Cornelius et al., 2020), therefore this also impacts the ability to estimate prevalence of PTSD and PTSS separately.

It is not clear from the literature how the type of cardiac event experienced or the emotional closeness of the relationship impacts on the prevalence of PTSD in partners, but it was observed in the included papers that living with the patient and the patient having cardiac/coronary events or heart transplant may increase risk of partners developing PTSD. However, as it was shown within a couple of included papers, there may be associations between personal characteristics of partners such as being female, having fewer years of education and lower income, having comorbid anxiety and depression, and having a history of mental health difficulties with the development of PTSD symptoms in partners. Therefore, these may be vulnerability factors for partners developing PTSD.

Most of the papers reported enough information on sample characteristics to suggest that the samples were representative of the target populations. However, there was limited information reported on ethnicity and socioeconomic status which may impact both the representativeness of the samples alongside rates of cardiac presentations and PTSD symptoms. Lower socioeconomic status has been linked to higher rates and symptom severity of PTSD (Webb et al. 2022); as the samples in the studies reported more participants with average or above average incomes, this may impact the prevalence of PTSD symptoms. However, six papers did not report on socioeconomic status it is unclear the impact this may have had in those papers. Ethnicity has also been linked to PTSD as those who are white have been shown to have lower lifetime rates of PTSD and lower risk of developing PTSD symptoms after an event. Only three papers reported on ethnicity however those that did had majority white samples which may have impacted on prevalence rates of PTSD.

Methodological issues were apparent across studies. Several of the studies had small samples and all included studies omitted power calculations to justify sample size. Across most of the papers participation and follow up rates was lower, which may have been a result of long periods between cardiac events and recruitment for some papers; therefore, this may have impacted the representativeness of the samples. Long time periods between cardiac events and assessment of PTSD symptoms may mean that rates of individuals who had experienced symptoms but have recovered may not be captured in the data. A significant issue in the papers included was how exposure to the traumatic event was categorised, for example witnessing a cardiac event versus partner receiving a heart transplant and the level of exposure to trauma this may have.

Strengths and Limitations

A strength of this review is the systematic nature of the search, the development of the search strategy and use of a quality assessment tool. It is the only systematic review to synthesise the available data on prevalence of PTSD/PTSS in partners of Cardiac patients and the factors associated with this. Quality appraisal of all included studies was conducted, and this was done with a second rater to enhance the reliability of the appraisals.

A limitation of this review is that conclusion that can be drawn are limited or caveated by the lack of robust evidence in the exciting literature analysed. An additional limitation to this review is that selection of the studies and data extraction was conducted by one reviewer, increasing the likelihood of missed data.

Implications and Conclusions

This review found that there are biases evident within the evidence base and due to the heterogeneity of the papers, a clear understanding of the prevalence rates in partners could not be made. Despite prevalence rates having significant variance in the current literature, PTSD symptoms in partners should be considered alongside the potential impact on patient care by cardiac service. The 11 factors reported in the included studies associated with PTSD may potentially aid the identification of individual's more at risk of developing PTSD, for example through screening of these factors in partners of patients. Screening may be able to operate at several levels including patient problem e.g. type of cardiac event, relationship e.g. closeness, and risk factors e.g. gender, education and socioeconomic status. Identification of individuals may help to inform service design and the appropriate levels of support required.

It was reported that in the UK approximately 2.3 million people are living with coronary heart disease, around 1.4 million people are living after surviving a heart attack, 900,000 people are living with heart failure, and there are more than 30,000 out-of-hospital cardiac arrests every year (British Heart Foundation, 2023). This indicates that a significant number of lives are touched by cardiac disease and associated events each year and if even 5% of the partners of those people develop PTSS or PTSD, this could indicate a significant unmet need if this is not identified and supported within services.

This review may also add to the evidence base in relation to dyadic coping and how couples may cope with cardiac events and how they respond to each others emotional responses. It has been shown that in couples living with cardiovascular disease, that dyadic coping has been linked to increased engagement in self-care management (Kar et al., 2023). Previous research on dyadic coping has shown high rates of depression in patients and partners after left ventricular assist device implantation and have recognised that partners should be considered during treatment (Zimmerman et al., 2021); however, the existing evidence base does not specifically consider PTSD and the impact this has on partner coping. Given the findings in this review suggest partners may be at risk of developing PTSD symptoms, the impact of this on dyadic coping and subsequently cardiac treatment should be considered. It should be noted that not all factors had the same level of evidence as they were based on single studies or inconsistent data, for example, partner presence during cardiac event. There are significant difficulties with the exposure of interest and how this is assessed and reported throughout the literature, including the level of exposure to a traumatic event. Most papers did not define exposure e.g., presence during a cardiac event, and did not account for the level of exposure, for example difference between different cardiac presentations, and how this may impact on PTSD symptoms. Therefore, this negatively impacts the quality of the evidence and accuracy of PTSS or PTSD rates meaning there remains a lack of data to inform theoretical and clinical understandings of risk.

There is very limited evidence on the management and treatment of PTSD in partner of cardiac patients, therefore future research could look to investigate therapeutic intervention in this population. Due to biases in the current literature, further research should focus on detecting and responding to individuals who develop persistent PTSS and explore when and how PTSD symptoms are assessed to support services to implement this. Future research evaluating the impact of partners receiving psychological advice and treatment to prevent PTSD may also be important.

References

American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: APA Press.

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed.). Retrieved from: https://dsm.psychiatryonline.org/doi/book/10.1176/appi.books.9780890425787 (Accessed: 21/04/23)

Armand, S., Wagner, M. K., Ozenne, B., Verbunt, J., Sep, S. J. S., Berg, S. K., Knudsen, G. M., & Stenbæk, D. S. (2021) Acute Traumatic Stress Screening Can Identify Patients and Their Partners at Risk for Posttraumatic Stress Disorder Symptoms After a Cardiac Arrest: A Multicenter Prospective Cohort Study. *The Journal of cardiovascular nursing*, 37 (4), 394 – 401

Boersma-van Dam, E., van de Schoot, R., Geenen, R., Engelhard, I. M., & Van Loey, N. E. (2021) Prevalence and course of posttraumatic stress disorder symptoms in partners of burn survivors, *European Journal of Psychotraumatology*, 12 (1)

Brinkrolf, P., Metelmann, B., Metelmann, C., Baumgarten, M., Scharte, C., Zarbock, A., Hahnenkamp, K., & Bohn, A. (2021) One out of three bystanders of out-of-hospital cardiac arrests shows signs of pathological psychological processing weeks after the incident - results from structured telephone interviews. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine,* 29, 131.

British Heart Foundation (2023) UK factsheet. Retrieved from: https://www.bhf.org.uk/what-we-do/our-research/heart-statistics (Accessed: 25/04/23)

Brouwers, C., Denollet, J., Caliskan, K., de Jonge, N., Constantinescu, A., Young, Q., Kaan, A., Pedersen, S. S. (2015) Psychological distress in patients with a left ventricular assist device and their partners: an exploratory study. *European Journal of Cardiovascular Nursing*, *14*(1), 53-62.

Bunzel B., Laederach-Hofmann K., Wieselthaler G.M., Roethy W. & Drees G. (2005) Posttraumatic stress disorder after implantation of a mechanical assist device followed by heart transplantation: Evaluation of patients and partners. *Transplantation Proceedings*, 37 (2), 1365-1368.

Bunzel, B., Roethy, W., Znoj, H., & Laederach-Hofmann, K. (2008) Psychological consequences of life-saving cardiac surgery in patients and partners: Measurement of emotional stress by the Impact of Event Scale. *Stress and Health*, *24* (5), 351–363.

Cornelius, T., Vilchinsky, N., Fait, K., Matetzky, S., & Hod, H. (2020) Early exposure to cardiac treatment and distress among patients and their caregiving partners. *Frontiers in Psychology*, *11*.

De Padova, S., Grassi, L., Vagheggini, A., Belvederi Murri, M., Folesani, F., Rossi, L., et al. (2021) Post-traumatic stress symptoms in long-term disease-free cancer survivors and their family caregivers. *Cancer Medicine*, 10, 3974-3985.

Dew, M. A., Myaskovsky, L., Dimartini, A. F., Switzer, G. E., Schulberg, H. C., & Kormos, R. L. (2004) Onset, timing and risk for depression and anxiety in family caregivers to heart transplant recipients. *Psychological Medicine*, *34* (6), 1065–1082.

Edmondson, D., Richardson, S., Falzon, L., Davidson, K. W., Mills, M. A. & Neria, Y. (2012) Posttraumatic Stress Disorder Prevalence and Risk of Recurrence in Acute Coronary Syndrome Patients: A Meta-analytic Review. *PLOS ONE*, 7 (6), e38915.

Eisenberg, R., Fait, K., Dekel, R., Levi, N., Hod, H., Matezki, S., & Vilchinsky, N. (2022) Cardiac-disease-induced posttraumatic stress symptoms (CDI-PTSS) among cardiac patients' partners: A longitudinal study. *Health psychology,* 41 (10), 674 - 682

Fait, K., Vilchinsky, N., Dekel, R., Levi, N., Hod, H. & Matetzky, S. (2016) Cardiac Disease-Induced Post-traumatic Stress Symptoms (CDI-PTSS) Among Patients' Partners. *Stress Health*, 33, 169– 176

Foa, E. B., McLean, C. P., Zang, Y., Zhong, J., Powers, M. B., Kauffman, B. Y., et al. (2016) Psychometric properties of the Posttraumatic Diagnostic Scale for *DSM-5* (PDS-5). *Psychological Assessment,* 28, 1166 - 1171.

Gao, Z., Chen, Z., Sun, A. & Deng, X (2019) Gender difference in cardiovascular disease. *Medicine in Novel Technology and Devices*, 4, 100025

Goldzweig, G., Hasson-Ohayon, I., Meirovitz, A., Braun, M., Hubert, A. & Baider, L. (2010) Agents of support: Psychometric properties of the Cancer Perceived Agents of Social Support (CPASS) questionnaire. *Psycho-Oncology*, 19 (11), 1179 – 1186.

Johnson, C. C., Suchyta, M. R., Darowski, E. S., Collar, E. M., Kiehl, A. L., Van, J., Jackson, J. C., & Hopkins, R. O. (2019). Psychological Sequelae in Family Caregivers of Critically Ill Intensive Care Unit Patients. A Systematic Review. *Annals of the American Thoracic Society*, *16*(7), 894–909.

Kar, M. K., Soleimani, F., Alizadeh, A. & Hajikarimi, M. (2023) Associations of perceived and common dyadic coping with self-care in older couples with cardiovascular disease: A dyadic analysis, *Heart & Lung*, 57, 229-235

King, L. A., Pless, A. P., Schuster J. L., Potter, C. M., Park, C. L., Spiro, A. III, & King, D. W. (2012) *Risk and Protective Factors for Traumatic Stress Disorders*. In The Oxford Handbook of Traumatic Stress Disorders, Eds J. Gayle Beck and Denise M. Sloan. Oxford University Press.

McCarthy, S. (2008) Post-Traumatic Stress Diagnostic Scale (PDS), *Occupational Medicine*, 58 (5), 379

McPeake, J., Mikkelsen, M. E., Quasim, T., Hibbert, E., Cannon, P., Shaw, M., Ankori, J., Iwashyna, T. J. & Haines, K. J. (2019). Return to Employment after Critical Illness and Its Association with Psychosocial Outcomes. A Systematic Review and Meta-Analysis. *Annals of the American Thoracic Society*, *16* (10), 1304–1311.

Moher, D., Liberati, A., Tetzlaff, J. & Altman, D. G. (2009). Preferred Reporting Items for Systematic Reviews and Meta- Analyses: The PRISMA Statement. *PLoS Med,* 6 (7), e1000097

Munn, Z., Moola, S., Lisy, K., Riitano, D. & Tufanaru, C. (2015) Methodological guidance for systematic reviews of observational epidemiological studies reporting prevalence and cumulative incidence data. *International Journal of Evidence-Based Healthcare,* 13 (3), 147-153

National Heart, Lung, and Blood Institute (2019) Study Quality Assessment Tools. Retrieved from: https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools. (Accessed: 24/03/23)

Olff, M. (2017) Sex and gender difference in post-traumatic stress disorder: an update. *European Journal of Psychotraumatology*, 8 (4), 1351204

Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., & Britten, N. (2006). Guidance on the conduct of narrative synthesis in systematic reviews. A product from the ESRC methods programme. Lancaster University.

Prins, A., Ouimette, P., Kimerling, R., Cameron, R. P., Hugelshofer, D. S., et al. (2003) The primary care PTSD screen (PC-PTSD): Development and operating characteristics. *Primary Care Psychiatry, 9* (1), 9–14.

Presciutti, A., Newman, M. M., Grigsby, J., Vranceanu, A. M., Shaffer, J. A., Perman, S. M. (2021) Associations between posttraumatic stress symptoms and quality of life in cardiac arrest survivors and informal caregivers: A pilot survey study. *Resuscitation Plus*, 4 (5), 100085.

Randall, G., Molloy, G. J. & Steptoe, A. (2009) The impact of an acute cardiac event on the partners of patient: A Systematic Review. *Health Psychology Review*, 3 (1), 1 - 84

Robins, L. N., Wing, J. K., Wittchen, H.-U., Helzer, J. E., Babor, T. F. et al., (1989) The Composite International Diagnostic Interview: An epidemiologic Instrument suitable for use in conjunction with different diagnostic systems and in different cultures. *Archives of General Psychiatry*, 45 (12), 1069 – 1077

Rodgers, J. L., Jones, J., Bolleddu, S. I., Vanthenapalli, S., Rodgers, L. E., Shah, K., Karia, K., & Panguluri, S. K. (2019). Cardiovascular Risks Associated with Gender and Aging. *Journal of cardiovascular development and disease*, 6 (2), 19.

Schein, J., Houle, C., Urganus, A., Cloutier, M., Patterson-Lomba, O., Wang, Y., et al. (2021) Prevalence of post-traumatic stress disorder in the United States: a systematic literature review, *Current Medical Research and Opinion*, 37 (12), 2151-2161

Solomon, Z., Horesh, D. & Ginzburg, K. (2021) Trajectories of PTSD and secondary tramatization: A longitudinal study. *Journal of Psychiatric Research*, 138, 354 - 359

Vilchinsky, N., Ginzburg, K., Fait, K., & Foa, E. B. (2017). Cardiac-disease-induced PTSD (CDI-PTSD): A systematic review. *Clinical Psychology Review*, 55, 92-106.

Stukas, A. A., Dew, M. A., Switzer, G. E., DiMartini, A., Kormos, R. L., & Griffith, B. P. (1999) PTSD in heart transplant recipients and their primary family caregivers. *Psychosomatics*, 40 (3), 212–221.

Vilchinsky, N., Ginzburg, K., Fait, K. & Foe, E. B. (2017) Cardiac-disease-induced PTSD (CDI-PTSD): A Systematic Review. *Clinical Psychology Review*, 55, 92 – 106

van't Wout Hofland, J., Moulaert, V., van Heughten, C. & Verbunt, J. (2018) Long-term quality of life of caregivers of cardiac arrest survivors and the impact of witnessing a cardiac event of a close relative*, Resuscitation*, 128, 198 – 203

Weathers, F.W., Litz, B.T., Keane, T.M., Palmieri, P.A., Marx, B.P., & Schnurr, P.P. (2013) The PTSD Checklist for *DSM-5* (PCL-5). National Centre for PTSD.

Webb, R., Smith, A. M., Ayers, S., Wright, D. B. & Thornton, A (2021) Development and Validation of a Measure of Birth-Related PTSD for Fathers and Birth Partners: The City Birth Trauma Scale (Partner Version). *Frontier in Psychology*, 12.

Webb, E. K., Ward, R. T., Mathew, A. S., Price, M., Weis, C. N., Trevino, C. M., et al. (2022) The role of pain and socioenvironmental factors on posttraumatic stress disorder symptoms in traumatically injured adults: A 1-year prospective study. *Journal of traumatic stress*, 35 (4), 1142 – 1153.

Weiss, D.S. (2007) The Impact of Event Scale: Revised. In: Wilson, J.P., Tang, C.Sk. (eds) Cross-Cultural Assessment of Psychological Trauma and PTSD. International and Cultural Psychology Series. Springer, Boston, MA.

Zalta, A. K., Tirone, V., Orlowska, D., Blais, R. K., Lofgreen, A., Klassen, B., Held, P., Stevens, N. R., Adkins, E., & Dent, A. L. (2021) Examining moderators of the relationship between social support and self-reported PTSD symptoms: A meta-analysis. *Psychological Bulletin,* 147 (1), 33–54.

Zimmermann, A., Dolle, S., Waldenburger, N., Junemann, F. & Bara., C (2021) Relationship quality, dyadic coping, and depression in couples with left ventricular assist device implantation, *European Journal of Cardiovascular Nursing*, 20 (4), 342–347

Zimmerli, M., Tisljiar, K., Balestra, G.-M., Langewitz., W., Marsch, S. & Hunziker, S. (2014) Prevalence and risk factors for post-traumatic stress disorder in relatives of out-of-hospital cardiac arrest patients. *Resuscitation*, 85 (6), 801 – 808

Chapter 2

Trauma Informed Cardiac Care – A Staff Perspective

Prepared in accordance with the author requirements for The Journal of Clinical Psychology in Medical Settings https://www.springer.com/journal/10880/submission-guidelines.

Plain English Summary

Title: Trauma Informed Cardiac Care: A Staff perspective

Background

There are high rates of trauma in people who have experiences a Cardiac event and if this is not addressed it can impact on patient's health outcomes. There is an increased recognition of the impact of trauma on mental and physical health. There is also a need to understand how to support staff to support patients who have an experience of trauma. There is limited evidence on how Trauma-Informed Practice (TIP) is used in Cardiac Rehabilitation (CR) services.

Aims and Questions

This research study wanted to learn about the experiences of staff working in CR applying TIP. It also aimed to find out if there are any barriers or things that supported staff to use TIP and hopes to transfer this learning to support services develop TIP.

Methods

Any member of staff who worked as part of the core CR team within NHS Greater Glasgow and Clyde were allowed to take part, if they had six months of experience working in CR. In total, six people agreed to participate in a 1:1 interview focused on their experiences. Interviews were recorded, typed up and analysed using a research method called Interpretive Phenomenological Analysis (IPA).

Results

Staff experiences were represented in four themes: 1) It is important to get to know a patient and build relationships to develop their trust, 2) Managing the demands on our time is one of the biggest challenges working in CR, 3) It is rewarding when patients feel safe to open up emotionally and engage in CR, but it is their choice, and 4) CR is about ensuring safety and empowering patients to make changes to return to their independent "normal lives".

Conclusions

The analysis showed that staff need training on TIP, alongside staff being able to adapt how they work with patients and the importance of building relationships with patients. These are all parts of staff practice which helps the use of TIP across settings. Further research should look at the effect of staff training in TIP and how confident they feel to use it. Future research should explore patients experience of CR and if TIP is being used from their viewpoints.

Abstract

This study explores the experiences of six members of staff implementing Trauma Informed Practice (TIP) within Cardiac Rehabilitation. Semi-structured interviews were analysed using Interpretative Phenomenological Analysis and four themes were identified: 1) It is important to get to know a patient and build relationships to develop their trust, 2) Managing the demands on our time is one of the biggest challenges working in CR, 3) It is rewarding when patients feel safe to open up emotionally and engage in CR, but it is their choice, and 4) CR is about ensuring safety and empowering patients to make changes to return to their independent “normal lives”. This study also provides insight into barriers and facilitators to the implementation of TIP which may be transferable across services and suggestions for future research.

Introduction

With increased recognition of the impact of trauma on mental and physical health there is a parallel need to understand how the workforce can be supported to engage effectively with people who have experienced trauma (NHS Education for Scotland, 2017). One context where traumatic stress and associated sequelae can occur is following a cardiac event (Edmondson & Cohen, 2013). The life-threatening nature of the event itself and the intrusive nature of associated treatments, for example defibrillation and admission to Intensive Care, can lead to post-traumatic stress symptoms (PTSS; Alonzo, 2020). PTSS after a cardiac event have also been linked to subsequent heart problems and mortality (Edmondson et al., 2011), alongside increased cardiac-related hospital admission (Shemesh et al., 2004), lower cardiac treatment adherence (Shemesh et al., 2006) and poorer quality of life (Doerfler et al., 2005).

Furthermore, PTSS not associated with a cardiac event have also been shown to increase the risk of cardiovascular disease (CVD; Kubzanskay et al., 2009). Chronic traumatic stress can be detrimental to cardiac health (Coughlin, 2011); therefore, traumatic stress has been identified as an independent risk factor for the development of CVD (Heenan et al., 2020). Exposure to traumatic events throughout the lifespan has predicted greater mortality and a greater number of adverse cardiovascular events (Hendrickson et al., 2013). A recent study has shown an association between traumatic experiences in childhood and cardiovascular disease in adulthood, particularly in women (Galli et al., 2021). It was found that individuals with cardiovascular disease had a higher number of early traumatic experiences including emotional neglect, emotional abuse, and physical abuse than control group participants. The experience of previous traumatic stress has also been associated with poorer health outcomes in patients with CVD (Heenan et al., 2020), reduced adherence to treatment and relational difficulties with care providers in medical settings (Regal et al., 2020).

Cardiac Rehabilitation (CR) following a cardiac event has been shown to reduce morbidity and mortality (Lavie & Milani, 2009) alongside improving quality of life and performance of activities of daily living (Hevey et al., 2007), and significantly reducing anxiety and depression (Egger et al., 2008). National guidance highlights psychosocial interventions should form part of CR (SIGN 148; Health Improvement Scotland, 2016). However, these guidelines do not provide specific guidance on the impact or management of trauma within a cardiac setting. One paper suggested that screening for PTSS after completion of a CR programme would be helpful to identify patients who would benefit from further specialist psychological support (Perkins-Porras et al., 2015).

Trauma-Informed Practice (TIP) has been established as a key priority for healthcare services. Fallot and Harris (2006) identified 5 key principles underlying TIP: safety, trustworthiness, choice, collaboration, and empowerment. Based on these, the Trauma-Informed Practice Toolkit (Scottish Government, 2021) outlines how services can provide trauma-informed practice including physical environments, screening and assessment of trauma, training and workforce development, governance and leadership. In their systematic review, Bryson et al (2017) identified five factors in implementing TIP in youth mental health inpatient care: 1) leadership commitment to TIP; 2) supporting staff e.g., training and supervision; 3) including patient and family perspectives; 4) outcome orientation e.g., reviewing data to inform practice and motivate improvements; 5) aligning policy and practice with trauma informed principles. However, it is unclear how transferable these findings are to CR, despite the impact of trauma outlined above.

To date, there is limited research on the implementation of TIP within CR services. This may be due to the medical model often utilised in clinical health settings and its focus on curing individuals' physical health presentations. This is in contrast to other settings such as Addictions, Homelessness, and Criminal and Community Justice Services where staff implementations support needs have been more fully assessed (Hammond & Gardner, 2018). The findings in those services suggested that staff recognised trauma as highly prevalent amongst service users, that trauma may affect the way people engage with services and that interactions with services could be retraumatising. Despite this, staff self-reported both low levels of confidence and limited understanding of TIP. The lack of guidance on implementing TIP in other integrated care settings such as oncology has been identified, with recommendations for screening for adverse childhood experiences, staff training and integrated counselling services (Regal et al., 2020).

A review of the literature on TIP within healthcare settings in general concluded that the evidence base was limited and further research on patient and staff experiences of TIP is required (Reeves, 2015). The importance of staff training and need to address challenges with implementing TIP have also been evidenced within an intellectual and developmental disabilities context (Keesler, 2016). There remains a gap in the research focused on the implementation of TIP within CR.

Aims

The main aim of this project was to explore the experiences of multidisciplinary team (MDT) staff working in CR around the implementation of TIP. A secondary aim was to identify barriers to implementation and facilitators to support good practice. Through elucidating a richer understanding of staff experiences of TIP in this context, by exploring transferability and impact it is hoped that this project will inform theoretical and service development more broadly.

Methodology

Design

The project data was acquired via qualitative semi-structured interviews with staff working within CR within NHS Greater Glasgow and Clyde (NHS GGC). These interviews were guided by a pre-determined interview schedule (Appendix 2.5) and focused on staff views of the service and training they have received from a trauma-informed perspective and their experiences of implementing TIP within the CR Service.

The qualitative data was analysed using Interpretative Phenomenological Analysis (IPA). IPA explores the lived experience of participants with an aim of identifying how individuals make sense of their experiences in their wider context and to develop themes which represent shared aspects of experiences across participants (Smith et al., 2009). Other forms of quantitative and qualitative methods were considered however IPA was considered to be the best fit to answer the research question of exploring the experiences of MDT staff due to it aiming to understand the phenomenology of participants experiences and how they interpreted and made sense of these experiences.

This approach has idiographic, phenomenological and hermeneutic epistemological underpinnings.

Participants

Eligible participants were recruited from CR Services across NHS GGC. The service runs across several sites and the MDT includes Clinical Psychology, Nursing and Physiotherapy. There was a total of 48 staff in CR Services across NHS GGC at the time of recruitment. Participants from qualified roles who had worked for at least six months within the core CR MDT were eligible to participate. Some participants may have received more specialist trauma training; however, this was not a prerequisite for participation and information regarding training was collected as part of the semi-structured interview and demographics information. Staff who were not part of the core team, students or pre-qualified, had worked in CR less than six months, or field supervisors involved in the project were excluded.

Purposive sampling was used during recruitment to ensure those recruited were experienced in this area and were able to provide rich information (Cresswell & Plano Clark, 2011). Information power theory was used to guide the adequate sample size for this research (Malterud et al., 2016) and this number was in line with recommendations when using IPA at doctoral level (Smith, et al., 2009).

Six participants were recruited to engage in in-depth interviews exploring their experiences. Two of the participants were male and four were female, aged between 32 and 60 and all identified as white. Three of the participants worked within nursing and three worked with physiotherapy and experience ranged from 1.5 years to 5 years in the service. Five of the participants stated that they had received some form of additional training in TIP.

Recruitment

Information regarding the project was discussed via MDT meetings and email by the service managers, field supervisor and primary researcher (PR). Eligible participants were provided with a research pack including a participant information sheet (Appendix 2.3), demographics form and consent form. The PR contacted potential participants who assented to discuss the study, to ensure they met the inclusion criteria, and agree an interview date if eligible and consenting. It was agreed with relevant managers that time to participate in the interviews was granted during work hours and protected to avoid interruptions.

Research Procedures

The interviews were conducted by the PR on an individual basis either face to face or remotely using MS Teams. A demographics form was given to participants at interview to collect data on the characteristics of the sample e.g. gender, ethnicity, profession and years of experience. A semi-structured interview schedule was developed using the TIP framework principles, adapted with the project supervisor and used flexibly as a guide throughout the interviews. The interviews lasted between 38 and 53 minutes and were recorded digitally. The interview recordings were transcribed verbatim, given a unique identification number and all identifiable data was anonymised.

Analysis

Analysis in IPA follows six steps beginning with verbatim transcription of the digital recording of the interview (Smith et al., 2009): i) each transcript was read on multiple occasions, ii) initial notes of semantic content and the choice of language were made on the transcripts (exploratory notes), iii) the researcher began the process of developing themes from the data (Exploratory Statements), iv) the researcher searched for connections across the themes (Personal Experiential Themes, PETs), v) moving to the next case the researcher bracketed previous themes to remain open-minded, vi) the researcher then looked for patterns across the cases (Group Experiential Themes, GETs).

Ethics

Ethical approval for this project was granted by the College of Medical, Veterinary, and Life Sciences (MVLS) ethics committee. Participants provided written consent to take part in the project. Participants were informed that their engagement was voluntary, personally identifying information would be anonymised at the point of transcription of the interview and they were free to withdraw until their data has been transcribed due to it no longer being identifiable. Confidentiality and the limits of this was also discussed with participants prior to the interview.

The participant information sheet referred to TIP to allow for transparency with participants in line with ethical considerations, however this was omitted from the interview due to the nature of IPA giving priority to individual experience and idiography.

Interviews were recorded digitally and stored securely on a password protected OneDrive account. Data was transcribed by the PR who was the interviewer and any identifiable information redacted for the transcripts. Recordings were stored until the study was completed and then destroyed. All recorded and written information was held and stored in accordance with the General Data Protection Regulation (GDPR) and in line with NHS GGC and University of Glasgow policies.

It was recognised that interviewing staff about their experiences may evoke strong emotions therefore follow up support was agreed to be available through an identified Clinical Psychologist and participants were provided with debrief information signposting to other sources of support including their GP and The Wellbeing Hub. The ethical implications of taking clinicians out of clinical work was also acknowledged and agreed with management.

Reflexivity Statement

The PR acknowledges that as data analysis and development of themes requires interpretation by the PR, they are keen to account for any potential bias from their own experiences, assumptions and knowledge on meaning making in the data. Reflexivity is widely acknowledged as important in qualitative research to allow accountability, trustworthiness, clarity and personal growth (Delve Ho & Limpaecher, 2022) thus the PR was committed to practising reflexivity throughout the research process.

The PR is a trainee Clinical Psychologist who had no previous experience of research or clinical work within CR and had no prior relationships with any of the participants before they contacted to take part in this project. This meant that the PR had limited prior knowledge of CR services and staff which may have impacted the phenomenological analysis. Field supervision was used to gain any information required to support the project and recruitment, but this knowledge was bracketed throughout the IPA process. The PR does have previous experience working as part of a MDT with an adult clinical health population, therefore this may have given the PR some beliefs about clinical health teams based of their own clinical and personal experiences. The PR acknowledges that prior to this project they expected to identify staff and service barriers to providing TIP. Therefore, the PR ensured they used research supervision to establish that interpretations were grounded in the data and not being influenced by their beliefs or experiences. The PR also maintained reflective notes throughout the data collection, transcription, analysis and when defining themes. This ensured that the PR was bracketing any of their own knowledge or beliefs which may impact on how the data is interpreted to through potential researcher bias. As well as this, two of the participants transcripts, coding and PETs were discussed with the research supervisor who was experienced in IPA methodology and clinically within CR setting to deepen the understanding of the interpretation and to increase credibility of the analysis.

The PR did not have any prior experience in IPA however their transferable competencies from Clinical Psychology training supported them in conducting interviews and data analysis.

IPA is also seen to be an accessible approach for a researcher without expertise in qualitative methods (Smith, Flowers and Larkin, 2009). The PR found research supervision helpful to ensure they were conducting IPA methodology appropriately by managing fidelity to the model and to discuss any negative beliefs about the PR own research competencies and how these might impact in data collection and analysis.

Results

Four themes were identified: 1) It is important to get to know a patient and build relationships to develop their trust, 2) Managing the demands on our time is one of the biggest challenges working in CR, 3) It is rewarding when patients feel safe to open up emotionally and engage in CR, but it is their choice, and 4) CR is about ensuring safety and empowering patients to make changes to return to their independent "normal lives".

Adetailed description of each theme, supported by quotes from participants, is provided below. There were no discriminant cases identified in the analysis. A theme was defined if it was present across three or more participants and extracts from at least half the participants is provided as evidence for the themes (Smith, 2011).

1) It is rewarding to get to know a patient and build relationships to develop their trust.

This theme captures the importance of developing patient-clinician relationships, how these relationships are built and the impact this has on a patient's trust of a service/staff.

There was an emphasis by participants that building relationships with patients is rewarding and one of the best aspects of the job.

"I mean it's definitely rewarding because you-- you know you-- you get to know that person" (Peter)

"I love it. Yeah, it's -- that's the most rewarding part of the job, is developing the relationships and getting to know people and helping them achieve their goals and helping them at the end feel confident again." (Katie)

The term "rapport" was used by John, Peter, Katie, Sally and Emma who all discussed the importance of developing this with patients. It was frequently mentioned that developing these professional relationships requires time and repeated regular contact with patients.

"I think most of it for us-- or for me-- and cause obviously we want to try and interact with them as much as we can. So, the more we can kind of meet them, the better that is." (John)

"Emm rather than just seeing them a couple of times and then, you know, you're out the door, so you definitely build up stronger relationship with the patients yourself." (Peter)

It was also discussed the benefit of having face to face interactions with patients and the negative impact COVID-19 restrictions had on this due to classes being cancelled and clinics being conducted remotely.

"During COVID, that's probably what we did lose a wee bit emm-- was that sort of personal aspect, that social aspect too. Having the classes and the face-to-face classes, I think, and even from a patient perspective, that's what they missed out on". (Peter)

Participants reflected on the difference interacting with patients in more informal situations, e.g. the walking group or classes instead of more formal clinic appointment, and the positive impact this had on developing relationships.

"So probably just that main face to face-- and getting their confidence and just-- It sounds a bit flippant but, but not taking it too seriously in the beginning so that it just gets building a wee bit of rapport with the patients and that kind of tends to from my point of view-- That's how I think that's how it works." (John)

However, Sally and Peter reflected that it is important to keep professional boundaries with patients and Sally expressed that sometimes patients can become "overfamiliar" as they are building relationships with staff and this was something they managed through the support of the rest of the team.

"You don't want to have too much familiarity with them, but at the same time you're building that rapport for quite a fine line actually." (Sally)

The importance of getting to know a patient's "whole story" (Katie and Emma) including what is important to them personally was also described by participants and this also relates to theme 3 regarding engaging patients in CR.

"If they didn't feel safe, it would just be a very generic black and white appointment and-- Yeah, it would flag up a few things, you know, symptoms wise, but there wouldn't be the whole story, there wouldn't be their-- wouldn't been doing the whole holistic job". (Emma)

The relationships between developing rapport with patients and gaining their trust within CR was also described by participants and there is an emphasis within the transcripts that trust develops along with the relationship through time and repeated contact with staff:

"So it's all about rapport at first and getting that relationship going before they'll feel safe with if you." (Katie)

"if you're lucky you've maybe got them to agree to some further support or ongoing classes in which you can start to kind of gain the trust session by session…" (Emma)

This first theme was summarised well by Sally in her transcript and reflects on the importance of building relationships with patients and developing trust. These aspects both link to the implementation of TIP through trust and the recognition of the importance of relationships:

"Emm so if you're able to see them at class every week, you're building up that rapport, I think it gets you a much better understanding. You really get to know people, and they really begin to trust you." (Sally)

2) Managing the demands on our time is one of the biggest challenges working in CR.

This theme reflects the various demands on staff time and how this impacts how they manage their role and the patient experience. This theme may reflect challenges working within CR in general, however demands on staff time may impact aspects of care which relate to TIP such as being able to develop patient-clinician relationships and engage in TIP training.

Sally and Emma reflected that time is one of the biggest challenges working in CR, due to the amount of time spent with patients and the need to prioritise the tasks. Both Sally and John discussed balancing demands in the group settings, especially if patients are discussing emotional issues and Peter reflected that some patients require more staff resources:

“some of the things that can be quite challenging is time I would say and they get a lot of time when they come to clinic and they get a lot of our own 1 to 1 time and sometimes at the classes…they all save their their problems and their questions up for the class and that can often eat into their class time or it can take maybe from helping, maybe somebody that's not feeling well or-- So that can be a bit of a challenge.” (Sally)

“The challenge-- most challenging thing can be time management… and that always falls to the lowest of priorities because everything else like a clinic, has to be done, patients, and a ward have to be seen as a priority. And other things, phone calls, people phoning with symptoms, things like that all take precedence over a routine, you know, progress review we call it.” (Emma)

“So I suppose it's the time that-- your time and effort as well that you're putting into those people, they can be a bit more intensive, I guess. So they can, you know, from the resource-- resource point of view from staff.” (Peter)

Both Emma and Pat reflected on the difference between the time staff have on the ward and in CR to engage with patients, with CR having more time to sit with patients and find out how they are feeling about their experience. Emma stated that it is “sad” that ward staff do not have this time to be with patients anymore as it impacts patients experience and sometimes patients can feel that staff do not have time for them as a result.

“We know how busy it is on the wards for staff. And I know from the start of my career to now, the changes. You don't have time to sit with someone and really explain what we thinks happened to you and what's gonna happen. That's my job now and this job, because I've got time to do that. But you don't get the time in the ward to do it. Em and that's not their fault. But it's it does affect the experience of the patient. And then it affects what, what we get when we finally come to assess the person.” (Emma)

Peter also reflected on the impact of patients experience in hospital on trust and noted that he felt this was due to patients being "being overloaded with information and not knowing what to really do with it". Which was also reflected in Emma's transcript as she felt ward staff don't have the time to explain things to patients.

It was also evident across transcripts from participants that supervision and training are valued but sometimes not engaged in. Peter described "time constraints" being a factor impacting on engagement in supervision and training and reflected that it needs to be "more structured and timetabled back in again" for staff to engage in it. He noted that staff often participate in informal peer supervision and discussions about patients. Katie also reflected on how important it is to have time with the team to discuss patients, especially before running classes, so that staff are "all on the same page" about what a patient wants and needs. Katie also described the benefit of having time for clinical supervision and peer support to reflect on situations and how they were managed to get reassurance about their work:

"it's quite good in here because we do have in-service so we will have a chance to talk and we do have clinical supervision as well…So that helps, that helps that you can talk to your colleagues about it and it helps that, you know, they'll say, you know, you did the right thing, you know".

This theme indicates that a significant aspect of the staff role in CR is clinical contact with patients and this needs to be managed within the demands of the service. The quotes above reflect that some patients require staff time to be able to reflect on their experiences and their emotional wellbeing; this relates to TIP through the recognition that trauma will affect people in different ways and that staff need to respond by taking this into account to support recovery. Staff having time to explain information to patients in a manageable way also related to the principle of collaboration. The importance of staff having time to engage in training and supervision also relates to TIP through the National Trauma Training Framework and all staff being trained to an appropriate level to implement this.

3) It is important that a patient feels safe to open up emotionally and engage in CR, but it is their choice.

A central view expressed throughout the interviews related to the need for patients to discuss their emotional wellbeing, the importance of patients engaging with CR and how this is facilitated but ultimately it being a patient’s choice as to what they discuss, engage with and how.

The importance to both staff and patients of patients “opening up” about their emotional wellbeing was described:

“Personally, for me, if I'm with them quite a lot, they start to tell you more things as well and they kinda open up a wee bit more. And that’s obviously really good for them because it's good for their rehabilitation, but it's good for us as well because it's good to understand what they are thinking and what they are getting out of the program…” (Katie)

“A big reason why people continue to come to our classes is as much for you know, social, emotional support and being with other people, than it is knowing that this is going to help that mechanics of their heart” (Emma)

“It's amazing the amount of information I think patients give you maybe not necessarily all about their heart, about everything. When you close the door and they give patients time to, to speak about things.” (Pat)

Pat’s reflection was echoed across transcripts that it is important to give patients privacy, time and space to talk about any issues in their lives. Katie noted that patients need to disclose any mental health issues to staff for them to be able to be referred on to Psychology services if this is needed. Peter also reflected on current SIGN guidance and the recommendations including emotional recovery in Chronic Heart Failure.

Participants discussed that it was “surprising” how much focus in CR is on emotional wellbeing and the difference this may be from other areas of work:

“…because to me what I've learnt is that the psychological side of things is so important in the scheme of things, that we always forget about that until you kind of, maybe for me-- being in the service you appreciate that people have these quite natural emotions after an event”. (John)

“Emm cardiac rehab has probably been the one area that, as a (role), it's definitely been a lot more like the emotional and mental recovery of things that has been like brand new for me.” (Peter)

There was a sense across participants that if a patient engaged and begins to talk about emotional issues, that they feel safe and trust the service:

“So I suppose-- I say-- just if they are able to approach us and and chat to us, and I suppose that's what a form of safety looks like for them because they might not have anyone else to chat to or open up about or they might never have opened up about, you know, these types of emotions or feelings or issues that they that they have.” (Peter)

Katie reflected that “the majority of people do open up” but some patients “keep a barrier up”. Emma also noted that patients can often have “a lot of barriers up” when they are in hospital after an event. One participant reflected that the role of nurses is to help “fix” people, therefore it can be challenging if a patient doesn’t engage and allow for this to happen. Participants discussed that it can be frustrating and difficult to not take it personally if a patient doesn’t open up or struggles to engage but reflected that it is not staffs fault when this happened.

“And I suppose sometimes you just have to do what you can. And if they don't-- you can't force people to do things. But that is the frustrating part.” (Pat)

“Emm because then you think that you’ve failed because you haven't managed to get into that person’s thought process and help them through it. But then you've also got to realise that you can't-- You can only try your best” (Katie)

Throughout the transcripts, participants reflected on possible reasons some patients struggle to “open up” or engage with CR:

“they haven't felt like they could speak to us… Because they're still trying to deal with having a cardiac event and what that means to them and it takes a different time for everybody…it might actually be a a personality thing” (Katie)

“I think sometimes it comes down to their own understanding and their own knowledge … But you do get people that are just really fixed and have their own fixed ideas, and nothing's gonna tell you otherwise.” (Sally)

Emma also reflected that it can be individual’s personality that can influence whether they open up and engage or not. There was a sense across the transcripts that patients were choosing whether to engage and open up and that staff do their best to support and give the choice to patients, but it ultimately comes down to the patients e.g. personality traits or anxiety levels.

John and Peter reflected on the difference in working with patients who have different engagement with CR:

“I mean you do get obviously a spectrum of people who turn up who, some from the very nervous and the very to the very confident people. So I think it is. Em my-- don’t know if it was a skill, but hopefully I kind of understand what what kind of personality the patient's got. And then I take it from there. So sometimes some patients you have to be quite serious with them-- You know they're they're very traumatised or whatever it might be, whereas other people you can kind of tell by the personality you can be quite jokey with them and be quite relaxed with them and you maybe get more out of them that way without being nosey, but that's sometimes that works better for me.” (John)

“Yeah it's definitely just a bit easier with the person who is straightforward and just, you know, cruises through cardiac rehab at times and are open and receptive to all the information given.” (Peter)

It was reported throughout the transcripts that staff found it more challenging to work with patients who are not as open or engaged with CR. Katie also reflected that it can be overwhelming for staff when a patient does open up, especially those with complex backgrounds or in situations you might not expect them to e.g. in an exercise class. This may indicate some barriers to TIP through staff not knowing how to respond to patients emotional needs or how to engage with patients who may find it more challenging to “open up”, possibly due to trauma.

When asked about what supports staff have when working with patients, John and Katie reflected that training on how to work with patients from a psychological perspective is helpful and they would like more of this.

“So obviously that kind of AsSETs training (NES training on Psychological issues in Physical health) is really good cause it teaches you how to-- how to react or how to listen or how to you know, coach people who are having those, having those issues. So I don't think we could, I don't think I could do my job properly without both of those from both sides of the, that kind of input.” (John)

“There's a really good LearnPro through the cardiac one and it's all to do with you know how people deal with having heart conditions and and the kind of psychological effects of it and how you can-- how you can help.” (Katie)

This theme reflects TIP through the recognition of the importance of offering a greater sense of choice, control, collaboration, and safety to patients, however there was not a focus through the data on the relationship with this practice to resist re-traumatisation or a clear recognition of the affects of trauma on how patients may present or engage.

4) Cardiac Rehab is about ensuring safety and empowering patients to make changes to return to their independent “normal lives”.

This theme relates to participants views on their role with patients in CR being to promote engagement in CR, empower individuals to make lifestyle changes and increase independence so they can live meaningful lives.

There was a significant focus through the transcripts on the importance of patients feeling safe within CR. This focus was primarily focused on physical safety and in relation to staff proving information to patients, so they understand what is safe and reengage with exercise. There was a sense across the transcripts of the importance of giving patients space to talk, but staff still have certain things they feel they need to cover and get across to patients, especially about physical safety. It was also reflected that for patients to be able to engage with CR, especially the exercise programmes, they need to feel safe.

“I suppose even if someone wasn't interested in like an exercise perspective, I would still want to get across to them what's safe.” (Peter)

“If they don't feel safe then they're not gonna be able to do it and they're not gonna engage with it and they are not gonna get any benefit from it so, I think it's definitely, extremely important.” (Sally)

Emma reflected that if patients feel safe in CR then staff are “doing our job properly”. John described that it is rewarding to see patients having a lasting benefit from CR. Katie also reflected that getting feedback from patients on what they have found beneficial is helpful for staff, so they know that patients are benefitting, and staff are doing a “good job”.

There was also an emphasis on the aim of CR to be patients “returning” to their “normal” lives:
“They all-- they need to get them back on track to get them to their normal lifestyle again.” (John)

“But you know generally that's what we're aiming for and a lot of that breakdown barriers for patients and just lets them get back into their normal life again as normal as they as they can get back to you again but you know.” (Peter)

“it's really just giving them that support to be able to go out and do their normal day-to-day and it just takes a while to get their confidence back” (Sally)

Throughout the transcripts, there was a significant focus on the need to tailor and adapt input to the needs of a patient and what is important to them to support them to make changes in their lives. This was often described happening through collaboration and getting to know a patient and offering them choice, for example how and when to attend clinic, the type pf exercise programme, what they want to engage with e.g. classes/walking group.

“it's all about that tailoring it to the individual patient” (John)

“it's just we keep stressing that it's what they want it's em, what they feel is important and what their needs are real individually, you know, tailor to that.” (Emma)
“I suppose we try and treat every patient as an individual and people will want different things out at the service and we have to tailor our information, the amount of information, the type of information. … We always try and tailer everything to the patients needs. And. And we often ask what what's important to you and what do you want to get out of the cardiac rehab?” (Pat)

Throughout the transcripts, it was clear that staff’s role in CR is with patients and that families can sometimes be a useful source of information however contact with families tend to be occasional and informal. Confidentiality, both due to other patients in classes and patient consent was raised as factors when engaging with families. However, Peter did note that the experience can be challenging for families:

“I mean, certainly, you know, the family are always welcome to come into the assessment as well and you know a lot of the times they do and they will give over their experience as well.

I mean a lot of it can be challenging and I think more so for family members, cause they are the bystanders in the whole situation.” (Peter)

“And if I'm honest, we don't have, We don't have too much interaction with the families, em a little bit, but most of it because I suppose, again, the nature of the process for engaging people.” (John)

“You do see the family now and again… we'd get to have a general chit chat at the end of it… But you also need to watch that you're not talking about them and anything that's happened to them in front of them, which sometimes can make it a wee bit difficult.” (Katie)

This theme relates to TIP through the principles of empowerment, choice, collaboration, and safety.

Discussion

This study sought to explore and understand the experiences of MDT staff working in CR around the implementation of TIP. Four group experiential themes emerged from the analysis: building relationships through trust, demands on staff time, patient's engagement and choice, and ensuring physical safety and empowering patients.

The TIP principles of choice and collaboration were most predominant across the themes, and it was clear that staff are focused on adapting how they work practically with patients and give choices of how they can engage with CR. Staff tailoring input and offering patients choice and collaboration around engagement may be the manifestation of TIP principles in practice and service design allowing for this may be a facilitator to implementing TIP. However, from the transcripts there was little reflection on the possible impact of trauma on how staff should adapt practice or how individuals may engage with services. Therefore, a lack of recognition of the different ways trauma can affect people may limit the responses staff have taking trauma into account, resulting in a barrier to implementing TIP.

Safety was also predominant across themes, however It was noted that staff interpreted the concept of safety being in relation to physical safety at times. This may be due to the nature of CR involving the assessment and management of patient's physical safety and medical/healthcare staff having a default mode of addressing physical safety as a priority, or they may have failed to learn from TIP training; both may be a barrier to implementing TIP.

The principle of trust was mentioned in theme one, however the focus tended to be on building relationships. Across the transcripts, participants struggled to identify examples of patients who might have struggled to trust the service and how this might have impacted on their experiences of working with those patients. It may be that patients who do not trust the services do not agree to engage initially meaning staff may not limited contact with these patients. However, it may be that staff do not recognise signs of patients struggling with trust and may conclude that patients are not engaging with CR due to other factors. In relation to TIP, trust includes predictability, openness, and accountability and these were not terms discussed across the transcripts. Some of the participants reflected on patient experience of prior services breaking their trust, e.g. being given wrong information, however, there was no acknowledgement of the possibility of this happening in CR and how this would be managed at a personal or service level. Therefore, staffs limited understanding of trust may be a barrier to TIP especially if things go wrong.

A key theme across transcripts was staff having the skills and time to develop professional relationships with patients, which may also be a facilitator to TIP. However, as seen in theme two, a significant challenge in CR appears to be staffs perception of having limited time to balance demands resulting in reduced engagement with supervision and training. This relates to core CR work but also impacts on TIP, for example through a lack of support developing relationships with complex patients. However, it is important to acknowledge staffs perception of priorities and the decisions they make about what they allocate time to. It was reflected in the data that the emotional aspect of care can be more challenging for staff and therefore they may be more likely to be neglect this. Therefore, a significant barrier to implementing TIP may be staff time and how they manage demands, alongside a lack of confidence or support in engaging with emotionally challenging aspects of CR. This finding is comparable to the wider literature that suggests the importance of supporting staff through supervision and training was also reported in oncology (Regal et al., 2020), youth mental health inpatient care (Bryson et al., 2017) and intellectual and developmental disabilities (Keesler, 2015) contexts.

The NES definition of being "trauma informed" outlines staff being able to recognise when someone may be affected by trauma, adjusting how they work to take this into account and responding to people in a way that supports recovery and recognises resilience (NHS Education for Scotland, 2017). There was a recognition within theme three that patients can be anxious, however data across the transcripts was less focused on potential trauma and the impact this may have on both individuals and practice. It may also be noted that there was a sense across transcripts of anxiety being personality-related or a characteristic of the individual rather than a temporary state and that perhaps anxious patients being more challenging to work with. TIP aims to move away from categorising patients in this way and more towards understanding a patients experience and how this may be impacting on their presentation.

When trauma was mentioned within the interviews, it tended to be in relation to cardiac related trauma and even though there was a recognition that patients can have different challenging life experiences, there was less acknowledgement of potential adverse childhood experience or trauma throughout a patient’s life, which is a key point within TIP. It may be that staff have internalised TIP messages about trauma only arising from a cardiac event and not the interface between pre-morbid trauma and the subsequent effect of this on the reaction to a cardiac event. Therefore, it may be suggested that staff having less recognition of trauma and how common an experience this may be for patients may be a barrier to implementing TIP. This differs from the findings that staff in Addictions, Homelessness, and Criminal and Community Justice Services (Hammond & Gardner, 2018) recognise the high prevalence of trauma amongst service users and the impact it can have on engagement and interactions with services. However, similarly to Hammond and Gardner (2018), it may be suggested that staff’s confidence in working with individuals with trauma may be lower. Another issue may be that CR staff do not see engagement with mental health and trauma as part of their role, except when it is very closely linked to the cardiac event, and it may be suggested that this may also be the case in other medical settings. Therefore, it may be suggested that more training on the prevalence and impact of pre-morbid trauma and how services should respond to this may be beneficial for implementing TIP.

Bryson et al (2017) also identified that staff are sensitive and responsive to feedback about patient outcomes and benefit from reviewing this data to inform practice and motivate improvements; this may also be reflected in theme four which recognises that staff find feedback from patients helpful to find their roles rewarding and ensure they are meeting patient’s needs. Therefore, services having opportunities to receive and disseminate feedback and use this in the development of services and practice may be another facilitator for TIP.

It was observed throughout the interviews that staff were often more focused on describing patient experiences than reflecting on their own and it is possible that this is due to the nature of staff roles being directly patient focussed alongside self-reflection possibly being a skill that is not as engaged in through these roles. A lack of reflection may be a result of having limited opportunities to engage in this through supervision or through a lack of training in how to develop this skill, therefore future TIP should address this more formally.

Limitations

IPA does not attempt to provide generalisable results therefore, caution should be taken regarding the robustness of the findings until they van be tested in other settings with similar participants. It should also be acknowledged that, as with all IPA research, the researcher's stance is subjective, and this may have impacted the study through interpretation of the data and development of the themes. For future research, it may be beneficial to include respondent validation to ensure that they participants experiences ad data have been accurately represented.

The wording within the interview schedule may have also impacted on how staff reflected on questions, and in the future, this could be adapted further to ensure it is targeting staff's experiences primarily. Several times throughout the interviews, participants referred to the researcher being part of the Psychology service, and despite this not being the case, this may have impacted on how participants answered and the content they discussed.

The participants involved in this study had a varied amount of experience to reflect on, received different amounts of training and came from different professions; however, this was reflected on in research supervision and during the analysis there did not seem to be difference in participants based on gender, role, experience, or training. However, it was noted that physiotherapy staff may have had more of a focus on exercise and therefore the physical safety of patients whereas nursing staff had more opportunities to meet with patient in clinic which might provide more space for patient to engage with emotional aspects of CR. The possibility of volunteer bias within the participants should also be recognised as individuals who volunteered to participate may have had different experiences and views on TIP than those who did not.

Critical Analysis of Methods

It is recognised that themes defined in the TIP framework emerged in the group experiential themes. On reflection, participants responses may have been influenced by reference to TIP in the participant information sheet, however TIP was not directly referenced to in the interview schedule to limit the impact of this. Analysis may have also been influence by the TIP framework and the project aim of exploring the implement of TIP. This was considered in supervision and reflexive practices to limit any potential impact of this bias. Due to the presence of a TIP framework, other analytical methods could be considered to answer the aims proposed in this project, for example framework analysis (Spencer et al., 2003). This may have allowed the use of implementation theory to support the interpretation of the results and thus add to the evidence base in relation to implementation of TIP across wider context. However, this would have provided less in-depth data on the individuals experiences and how they made sense of them whilst working within CR which was one of the main aims of this project.

Implications and Conclusions

The findings of this study suggest that within CR, staff seem to have a lot of practise and values which align with TIP however they may be lacking a formal understanding of TIP and how these fits into CR. It should be noted that even though some of the themes identified in this study are specifically referring to CR, the underlying principles alongside the barriers and facilitators to TIP could be considered across contexts, including healthcare, social care and occupational health. For example, the need for training on TIP, staff being able to tailor input to patients, support to manage demands on time to allow them to develop relationships with patients and receiving feedback to promote development of service, are all factors that can be transferred across settings.

Further research should examine the impact of TIP training on staff's confidence and the implementation of this in practice. The influence of job role and staff's capacity to apply TIP principles should be further explored in future work. It would also be beneficial to investigate patients' perspective on services, for example do patients experience care different if staff are training in TIP or not, and what do patients value the most from the TIP principles. what is important to them in relation to TIP and how this is being implemented.

This study provides valuable insight into the experiences of MDT staff providing TIP in CR. It also identifies barriers to implementation and facilitators of TIP which can guide service development more broadly and future research focus.

References

Alonzo, A. A. (2000) The experience of chronic illness and Post-Traumatic Stress Disorder: The consequences of cumulative adversity. *Social Science & Medicine*, 50, 1475–1484.

Bryson, S. A., Gauvin, E., Jamieson, A., Rathgeber, M., Faulkner-Gibson, L., Bell, S., Davidson, J., Russel, J., & Burke, S. (2017) What are effective strategies for implementing trauma-informed care in youth inpatient psychiatric and residential treatment settings? A realist systematic review. *International journal of mental health systems*, 11, 36.

Coughlin, S. S. (2011) Post-traumatic stress disorder and cardiovascular disease. *Open Cardiovascular Medicine Journal*, 5, 164–170

Cresswell, J. & Plano Clark, V. L. (2011) Designing and conducting mixed method research (2nd ed). Thousand Oaks, CA: Sage.

Curran, G. M. (2020) Implementation science made too simple: a teaching tool. *Implementation science communications*, 1, 27.

Delve. Ho, L. & Limpaecher, A. (2022) The Importance of Reflexivity in Qualitative Research. Essential Guide to Coding Qualitative Data. Retrieved from: https://delvetool.com/blog/reflexivity (Accessed: 06/04/2023)

Doerfler, L. A., & Paraskos, J. A. (2005) Post-traumatic stress disorder in patients with coronary artery disease: Screening and management implications. *The Canadian Journal of Cardiology*, 21 (8), 689–697.

Edmondson, D., & Cohen, B. E. (2013) Posttraumatic stress disorder and cardiovascular disease. *Progress in Cardiovascular Diseases*, 55, 548–556.

Edmondson, D., Rieckmann, N., Shaffer, J. A., Schwartz, J. E., Burg, M. M., Davidson, K. W., et al. (2011) Posttraumatic stress due to an acute coronary syndrome increases risk of 42-month major adverse cardiac events and all-cause mortality. *Journal of Psychiatric Research*, 45, 1621–16.

Egger, E., Schmid, J. P., Schmid, R. W., Saner, H., von Känel, R. (2008) Depression and anxiety symptoms affect change in exercise capacity during cardiac rehabilitation. *European journal of cardiovascular prevention and rehabilitation*, 15, 704–708

Fallot, R., & Harris, M. (2006). Trauma-Informed Services: A Self-Assessment and Planning Protocol. Retrieved from: https://www.theannainstitute.org/TISA+PPROTOCOL.pdf (Accessed: 03/08/21)

Fixsen, D., Naoom, S., Blase, K., Friedman, R., Wallace, F. (2005) *Implementation Research: A Synthesis of the Literature*. Tamps, FL: University of South Florida, Louis de la Parte Florida Mental Health Institute, National Implementation Research Network.

Galli, F.; Lai, C.; Gregorini, T.; Ciacchella, C.; Carugo, S. (2021) Psychological Traumas and Cardiovascular Disease: A Case-Control Study. *Healthcare*, *9*, 875

Guest, G., Bunce, A., & Johnson, L. (2006) How Many Interviews Are Enough? *Field Methods*, 18(1), 59–82.

Hammond, C. & Gardner, P. (2018) NHS Greater Glasgow and Clyde Trauma Informed Practice Training Needs Assessment: Final report and supporting action plan. Edinburgh: Rocket Science UK Ltd. Retrieved from: https://www.stor.scot.nhs.uk/handle/11289/580061 (Accessed: 20/09/21)

Health Improvement Scotland (2016) SIGN 147: Management of chronic heart failure. Retrieved from: https://www.sign.ac.uk/assets/sign147.pdf (Accessed 02/07/21)

Health Improvement Scotland (2016) SIGN 148: Acute coronary syndrome. Retrieved from: https://www.sign.ac.uk/assets/sign148.pdf (Accessed 02/07/21)

Heenan, A., Greenman, P.S., Tassé, V., Zachariades, F. & Tulloch, H. (2020) Traumatic Stress, Attachment Style, and Health Outcomes in Cardiac Rehabilitation Patients. *Frontiers in Psychology*, 11, 75

Hendrickson, C. M., Neylan, T. C., Na, B., Regan, M., Zhang, Q., & Cohen, B. E. (2013) Lifetime trauma exposure and prospective cardiovascular events and all-cause mortality: Findings from the heart and soul study. *Psychosomatic Medicine*, 75, 849–855.

Hevey, D., McGee, H. M., & Horgan, J. (2007) Relationship of initial level of distress to changes in health-related quality of life during cardiac rehabilitation or usual care. *Psychosomatic Medicine*, 69, 793–797.

Huckshorn K. A. (2014). Reducing seclusion and restraint use in inpatient settings: a phenomenological study of state psychiatric hospital leader and staff experiences. *Journal of psychosocial nursing and mental health services*, 52 (11), 40–47.

Keesler, J.M. (2016) Trauma-informed Day Services for Individuals with Intellectual/Developmental Disabilities: Exploring Staff Understanding and Perception within an Innovative Programme. *Journal of Applied Research in Intellectual Disabilities*, 29, 481-492.

Kubzansky, L. D., Koenen, K. C., Jones, C., and Eaton, W. W. (2009) A prospective study of posttraumatic stress disorder symptoms and coronary heart disease in women. *Health Psychology*, 28, 125–130.

Lavie, C. J. & Milani, R. V. (2011) Cardiac rehabilitation and exercise training in secondary coronary heart disease prevention. Progress in Cardiovascular Diseases, 53 (6), 398-403

Malterud, K., Siersma, V. D., & Guassora, A. D. (2016) Sample Size in Qualitative Interview Studies: Guided by Information Power. *Qualitative health research*, 26 (13), 1753–1760.

Metz, A. & Louison, L. (2018) The Hexagon Tool: Exploring Context. Retrieved from: https://nirn.fpg.unc.edu/resources/hexagon-exploration-tool (Accessed 07/02/22)

NHS Education for Scotland (2017) Transforming Psychological Trauma: A Knowledge and Skills Framework for the Scottish Workforce. Retrieved from: https://www.nes.scot.nhs.uk/media/rgxngvpv/nationaltraumatrainingframework-execsummary-web.pdf (Accessed 02/07/21)

NHS Greater Glasgow and Clyde (2018) Trauma Informed Practice Training Needs Assessment. Retrieved from: https://www.stor.scot.nhs.uk/handle/11289/580061 (Accessed 02/07/21)

Perkins-Porras, L., Joekes, K., Bhalla, N., Sutherland, C., Pollard, M. (2015) Reporting of Posttraumatic Stress Disorder and Cardiac Misconceptions Following Cardiac Rehabilitation. *Journal of Cardiopulmonary Rehabilitation and Prevention*, 35 (4), 238-245

Pietkiewicz, I. & Smith, J. A. (2014) A Practical Guide to Using Interpretative Phenomenological Analysis in Qualitative Research Psychology. *Psychological Journal*, 20, 7-14.

Reeves, E. (2015) A Synthesis of the Literature on Trauma-Informed Care. *Issues in Mental Health Nursing*, 36 (9), 698 -709

Regal, R. A., Wheeler, N. J., Daire, A. P. & Spears, N. (2020) Childhood Sexual Abuse Survivors Undergoing Cancer Treatment: A Case for Trauma-Informed Integrated Care. *Journal of Mental Health Counselling*, 42 (1), 15–31.

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., & Jinks, C. (2018) Saturation in qualitative research: exploring its conceptualization and operationalization. *Quality & Quantity*, 52 (4), 1893–1907.

Scottish Government (2021) Trauma-informed Practise: A Toolkit for Scotland. Retrieved from https://www.gov.scot/publications/trauma-informed-practice-toolkit-scotland/documents/ (Accessed: 02/07/21)

Shemesh, E., Koren-Michowitz, M., Yehuda, R., Milo-Cotter, O., Murdock, E., Vered, Z., et al. (2006) Symptoms of Posttraumatic Stress Disorder in patients who have had a Myocardial Infarction. *Psychosomatics*, 47, 231–239.

Shemesh, E., Yehuda, R., Milo, O., Dinur, I., Rudnick, A., Vered, Z., & Cotter, G. (2004) Posttraumatic Stress, non-adherence, and adverse outcomes on survivors of a Myocardial Infarction. *Psychosomatic Medicine*, 66, 521–526.

Smith, J., Flowers, P., & Larkin, M. (2009). Interpretative Phenomenological Analysis: Theory, Method and Research. London: Sage.

Smith, J. (2011) Evaluating the contribution of interpretative phenomenological analysis, *Health Psychology Review*, 5 (1), 9-27

Spencer, L., Ritchie, J., Lewis, J., & Dillon, L. (2003) Quality in Qualitative Evaluation: A framework for assessing research evidence. *National Centre for Social Research*. *Government Chief Social Researcher's Office.*

Appendix 1.1: Example Search Strategy - APA PsycInfo

1	exp Caregivers/	35234
2	exp Spouses/	16802
3	exp Family/	335903
4	famil*.tw.	494354
5	relative.tw.	181778
6	carer.tw.	4090
7	caregive*.tw.	61054
8	care-give*.tw.	2014
9	caring.tw.	29221
10	spouse.tw.	11883
11	Husband.tw.	6709
12	wife.tw.	8021
13	wives.tw.	8777
14	partner*.tw.	123746
15	significant other.tw.	1858
16	next of kin.tw.	538
17	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16	947920
18	exp Organ Transplantation/	5279
19	exp Heart Disorders/	14681
20	exp Heart Surgery/	1606
21	exp Cardiovascular Disorders/	69087
22	cardiac.tw.	19757
23	cardio*.tw.	43346
24	coronary*.tw.	11156
25	Myocardial infarction.tw.	4565
26	MI.tw.	6489
27	heart*.tw.	66846
28	Angina.tw.	1154
29	(heart adj10 bypass).tw.	150
30	bypass.tw.	3020
31	18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30	164573
32	exp Posttraumatic Stress/ or exp Posttraumatic Stress Disorder/ or exp Trauma/	121591
33	Post-Trauma*.tw.	20061
34	Posttrauma*.tw.	42832
35	post trauma*.tw.	20061
36	PTSD.tw.	40420
37	PTSS.tw.	1171
38	Cardiac Disease Induced-Post Traumatic Stress.tw.	1
39	CDI-PTSD.tw.	3
40	CDI-PTSS.tw.	2
41	32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40	137202
42	17 and 31 and 41	885

Appendix 1.2 Critical Appraisal tool: NHLBI Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies

Criteria	Yes	No	Other (CD, NR, NA)*
1. Was the research question or objective in this paper clearly stated?			
2. Was the study population clearly specified and defined?			
3. Was the participation rate of eligible persons at least 50%?			
4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?			
5. Was a sample size justification, power description, or variance and effect estimates provided?			
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?			

Criteria	Yes	No	Other (CD, NR, NA)*
7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?			
8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?			
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?			
10. Was the exposure(s) assessed more than once over time?			
11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?			
12. Were the outcome assessors blinded to the exposure status of participants?			

Criteria	Yes	No	Other (CD, NR, NA)*
13. Was loss to follow-up after baseline 20% or less?			
14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?			

Quality Rating (Good, Fair, or Poor)
Rater #1 initials:
Rater #2 initials:
Additional Comments (If POOR, please state why):

*CD, cannot determine; NA, not applicable; NR, not reported

Appendix 2.1 MRP Proposal

Final Approved MRP Proposal can be accessed at the following link:

https://osf.io/6bt9k

Appendix 2.2 Ethics Approval

28th October 2022

MVLS College Ethics Committee

Project Title: Trauma Informed Cardiac Care: A Staff Perspective Project No: 200220026

Dear Dr White,

The College Ethics Committee has reviewed your application and has agreed that there is no objection on ethical grounds to the proposed study. It is happy therefore to approve the project.

- Project end date: As stated in application.
- The data should be held securely for a period of ten years after the completion of the research project, or for longer if specified by the research funder or sponsor, in accordance with the University's Code of Good Practice in Research:
- https://www.gla.ac.uk/media/media_490311_en.pdf
- The research should be carried out only on the sites, and/or with the groups defined in the

  application.

- Any proposed changes in the protocol should be submitted for reassessment, except when it is necessary to change the protocol to eliminate hazard to the subjects or where the change involves only the administrative aspects of the project. The Ethics Committee should be informed of any such changes.
- You should submit a short end of study report to the Ethics Committee within 3 months of completion.
- For projects requiring the use of an online questionnaire, the University has an Online Surveys account for research. To request access, see the University's application procedure at https://www.gla.ac.uk/research/strategy/ourpolicies/useofonlinesurveystoolforresearch/.

Yours sincerely,

Jesse Dawson
MD, BSc (Hons), FRCP, FESO
Professor of Stroke Medicine
Consultant Physician
Clinical Lead Scottish Stroke Research Network / NRS Stroke Research Champion Chair MVLS Research Ethics Committee

Institute of Cardiovascular and Medical Sciences College of Medical, Veterinary & Life Sciences University of Glasgow
Room M0.05

Office Block
Queen Elizabeth University Hospital Glasgow
G51 4TF

jesse.dawson@glasgow.ac.uk

Appendix 2.3 Participant Information Sheet

The Participant Information Sheet for the study can be accessed at the following link:

https://osf.io/n6s9k

Appendix 2.4: Consent Form

The consent form for the study can be accessed at the following link:

https://osf.io/e7d2s

Appendix 2.5: Interview Schedule

Interview Schedule

Interview Preparation

- Introduce self and my role as researcher/Trainee Clinical Psychologist.
- Thank participant for agreeing to take part in the study.
- Remind participant about confidentiality and its limits, as well as data anonymity.
- Remind participant that they can stop for a break at any point in the interview if they need to do so, and that they can withdraw from participation at any point without any consequences.
- Discuss how I will ask some specific questions to help guide the interview but that I am interested in hearing about their experience from their point of view.
- Check consent and get participant to sign written consent form.

Questions

- In your experience, what helps you and the service get a better understanding of family and patient experiences? Prompt: of the cardiac event, CR/treatment, the service.

- Can you tell me about a time you had a helpful insight into a CR patient or family experience?

- In your experience working within CR, how are an individual patient or family's needs or preferences taken into account? Can you give an example? Prompt: has there been a time when you have worked in CR that a patient, or their family/carers was offered choice? Can you tell me about it please?

- Can you reflect on what it is like developing working relationships with patients within CR?

- Can you think of a time when you supported a patient to feel empowered within CR? Prompt: to make a decision/choice. Follow up: Can you please tell me about it? How did this feel?

- What does a patient feeling safe within CR mean to you? Prompts: What is important about this for you?

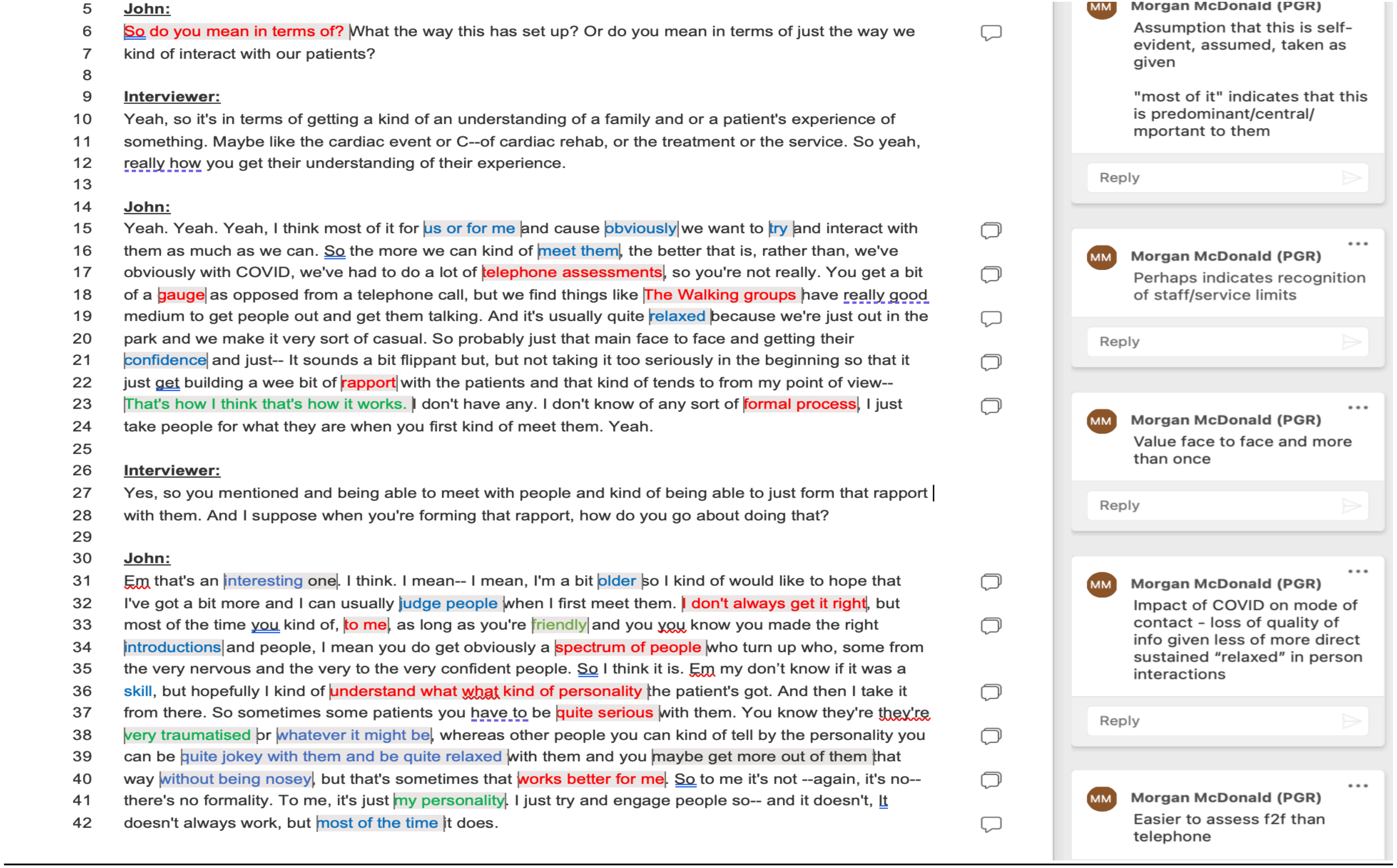
- Can you tell me about a time you worked with a patient who you thought struggled to place trust in the CR service? What was this like? Prompt: What did you notice/observe/what happened? Follow up: How did this compare with working with a patient who seemed to have a good level of trust in the CR service, in your experience?

- What supervision or training have you received to support you to work with patients who have experienced challenging life experiences? Prompt: What are the challenges for you? What might help?

- Is there anything I haven't asked you about that you think is important that I should know about your experience in this area?

Appendix 2.6 Examples of IPA Analysis

Step One: Example of Exploratory Notes



John:
So do you mean in terms of? What the way this has set up? Or do you mean in terms of just the way we kind of interact with our patients?

Interviewer:
Yeah, so it's in terms of getting a kind of an understanding of a family and or a patient's experience of something. Maybe like the cardiac event or C--of cardiac rehab, or the treatment or the service. So yeah, really how you get their understanding of their experience.

John:
Yeah. Yeah. Yeah, I think most of it for us or for me and cause obviously we want to try and interact with them as much as we can. So the more we can kind of meet them, the better that is, rather than, we've obviously with COVID, we've had to do a lot of telephone assessments, so you're not really. You get a bit of a gauge as opposed from a telephone call, but we find things like The Walking groups have really good medium to get people out and get them talking. And it's usually quite relaxed because we're just out in the park and we make it very sort of casual. So probably just that main face to face and getting their confidence and just-- It sounds a bit flippant but, but not taking it too seriously in the beginning so that it just get building a wee bit of rapport with the patients and that kind of tends to from my point of view-- That's how I think that's how it works. I don't have any. I don't know of any sort of formal process, I just take people for what they are when you first kind of meet them. Yeah.

Interviewer:
Yes, so you mentioned and being able to meet with people and kind of being able to just form that rapport with them. And I suppose when you're forming that rapport, how do you go about doing that?

John:
Em that's an interesting one. I think. I mean-- I mean, I'm a bit older so I kind of would like to hope that I've got a bit more and I can usually judge people when I first meet them. I don't always get it right, but most of the time you kind of, to me, as long as you're friendly and you you know you made the right introductions and people, I mean you do get obviously a spectrum of people who turn up who, some from the very nervous and the very to the very confident people. So I think it is. Em my don't know if it was a skill, but hopefully I kind of understand what what kind of personality the patient's got. And then I take it from there. So sometimes some patients you have to be quite serious with them. You know they're very traumatised or whatever it might be, whereas other people you can kind of tell by the personality you can be quite jokey with them and be quite relaxed with them and you maybe get more out of them that way without being nosey, but that's sometimes that works better for me. So to me it's not --again, it's no-- there's no formality. To me, it's just my personality. I just try and engage people so-- and it doesn't, It doesn't always work, but most of the time it does.

Morgan McDonald (PGR)
Assumption that this is self-evident, assumed, taken as given

"most of it" indicates that this is predominant/central/ mportant to them

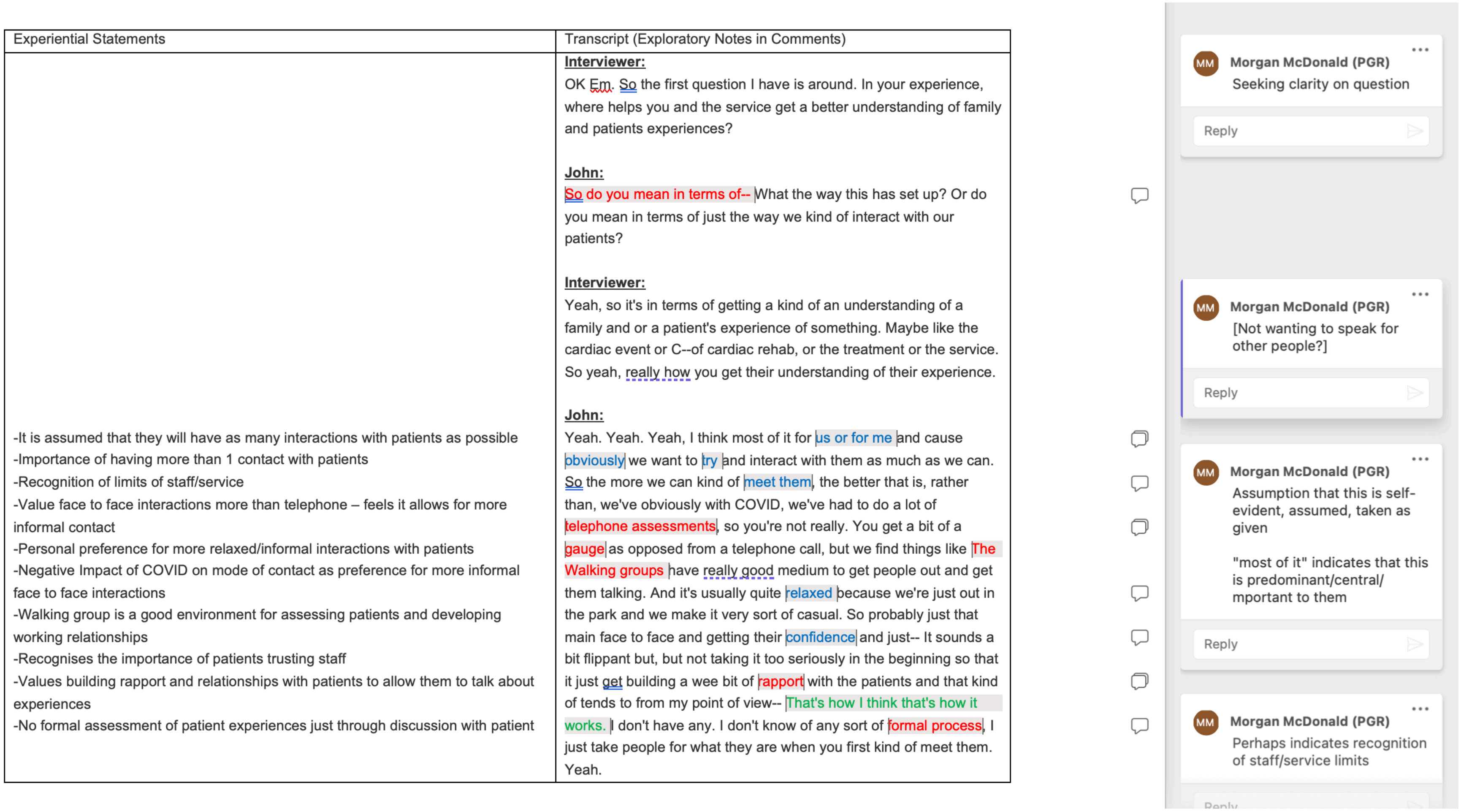
Morgan McDonald (PGR)
Perhaps indicates recognition of staff/service limits

Morgan McDonald (PGR)
Value face to face and more than once

Morgan McDonald (PGR)
Impact of COVID on mode of contact - loss of quality of info given less of more direct sustained "relaxed" in person interactions

Morgan McDonald (PGR)
Easier to assess f2f than telephone

Step Two: Example of Personal Experiential Statements



Experiential Statements	Transcript (Exploratory Notes in Comments)
-It is assumed that they will have as many interactions with patients as possible -Importance of having more than 1 contact with patients -Recognition of limits of staff/service -Value face to face interactions more than telephone – feels it allows for more informal contact -Personal preference for more relaxed/informal interactions with patients -Negative Impact of COVID on mode of contact as preference for more informal face to face interactions -Walking group is a good environment for assessing patients and developing working relationships -Recognises the importance of patients trusting staff -Values building rapport and relationships with patients to allow them to talk about experiences -No formal assessment of patient experiences just through discussion with patient	**Interviewer:** OK Em. So the first question I have is around. In your experience, where helps you and the service get a better understanding of family and patients experiences? **John:** So do you mean in terms of-- What the way this has set up? Or do you mean in terms of just the way we kind of interact with our patients? **Interviewer:** Yeah, so it's in terms of getting a kind of an understanding of a family and or a patient's experience of something. Maybe like the cardiac event or C--of cardiac rehab, or the treatment or the service. So yeah, really how you get their understanding of their experience. **John:** Yeah. Yeah. Yeah, I think most of it for us or for me and cause obviously we want to try and interact with them as much as we can. So the more we can kind of meet them, the better that is, rather than, we've obviously with COVID, we've had to do a lot of telephone assessments, so you're not really. You get a bit of a gauge as opposed from a telephone call, but we find things like The Walking groups have really good medium to get people out and get them talking. And it's usually quite relaxed because we're just out in the park and we make it very sort of casual. So probably just that main face to face and getting their confidence and just-- It sounds a bit flippant but, but not taking it too seriously in the beginning so that it just get building a wee bit of rapport with the patients and that kind of tends to from my point of view-- That's how I think that's how it works. I don't have any. I don't know of any sort of formal process, I just take people for what they are when you first kind of meet them. Yeah.

Morgan McDonald (PGR)
Seeking clarity on question

Morgan McDonald (PGR)
[Not wanting to speak for other people?]

Morgan McDonald (PGR)
Assumption that this is self-evident, assumed, taken as given

"most of it" indicates that this is predominant/central/mportant to them

Morgan McDonald (PGR)
Perhaps indicates recognition of staff/service limits

Step Three: Example of Personal Experiential Themes

Personal Experiential Themes	Subtheme	Quotes
I prefer getting to know a patient's whole story through extended informal face to face conversations	- Importance of having repeated interactions with patients - Face to face is better than telephone - Informal interaction is more beneficial - Assessment not intrusive - Understand patients experience by talking to them - COVID reduced face to face contact - Importance of knowing a patient's whole story - Using clinical judgement to respond to the needs and values of the individual patient - Importance of patients having purpose and meaning in life - Recognising patient strengths	"So probably just that main face to face and getting their confidence and just-- It sounds a bit flippant but, but not taking it too seriously in the beginning so that it just get building a wee bit of rapport with the patients and that kind of tends to from my point of view-- That's how I think that's how it works. " "So the more we can kind of meet them, the better that is, rather than, we've obviously with COVID, we've had to do a lot of telephone assessments, so you're not really. You get a bit of a gauge as opposed from a telephone call, but we find things like The Walking groups have really good medium to get people out and get them talking." "So to me it's not --again, it's no-- there's no formality. To me, it's just my personality. I just try and engage people so-- and it doesn't, It doesn't always work, but most of the time it does."
	- Limits to knowledge	

Step Four: Example of Cross-Case Analysis

John	Peter	Kate	Sally	Emma	Pat
I prefer getting to know a patient's whole story through extended informal face to face conversations	I find it is helpful to have regular face to face contact with patients through the classes at different stages in recovery to allow them to feel safe and build relationships to discuss issues.	I find it helpful when patients give feedback about CR so I know how they have benefitted from the programme and that I have done a good job in empowering them.	My role and CR has changed from when I started working in it but it is important to me to be challenged in my job.	I find it sad that the demands on staff time, negatively affects patient experiences	I find it rewarding to empower, help and fix patients, but it can be frustrating if they don't engage.
I find it difficult to manage patient expectations and needs sometimes in the context of constraints on my time and role	When I have my physio head on, I am more focused on exercise and ensuring patients understand what is safe and getting people back to their independent normal life.	It is important to me to have time to talk as a team to discuss patients and reflect on situations	It is important to me to have good relationships in the team to support me emotionally and practically with my role.	It is important to me that patients open up about their emotional wellbeing and engage to get the support they need	In my experience, if you give a patient privacy, time, and space to talk it is surprising how much patients trust us to open up about lots of different issues in their lives.
I can (usually) build better relationships by being myself, drawing on my own experience & personality	I have learnt that in CR it is important to step back and give the patients space to discuss what is important to them and explore emotional recovery	Having training about how to respond to a patient helps me feel less frightened about them asking something I don't	Managing demands on my time is one of the biggest challenges I have working in CR	I find that we reflect a lot as a team on negative situations with patients but recognise it is important to support each other	I think respecting patients as individuals and the choices they make helps them feel safe and engage more with us.

Step Five: Group Experimental Themes

GETs	Subthemes
It is important to get to know a patient and build relationships to develop their trust.	Building relationships with patients requires time and repeated regular contact in different contexts. It is important to get to know a patient's whole story. Face to face contact is more beneficial to patients than remote.
Managing the demands on our time is one of the biggest challenges working in CR.	Demands on staff time can negatively affects patient experiences, especially on the wards. It is important to have time to talk as a team to discuss patients and reflect on situations. Supervision and training are valued but sometimes not scheduled due to time constraints.
It is rewarding when patients feel safe to open up emotionally and engage in Cardiac Rehab, but it is their choice.	It is important to give patients privacy, time and space to talk about any issues in their lives Patients feel safe and trust the service when they keep coming back and open up about their mental wellbeing. It can be frustrating and difficult to not take it personally if a patient doesn't open up or struggles to engage but it is not staffs fault Training on how to work with patients from a psychological perspective is helpful

	Patients have different backgrounds, levels of anxiety and personalities which can make them more challenging to engage. Having knowledge and confidence around managing a patients cardiac health allows patients to feel safe and trust to engage in interventions.
Cardiac Rehab is about ensuring safety and empowering patients to make changes to return to their independent “normal lives”.	It is helpful when patients feedback how the programme has benefited them There is a focus on exercise and ensuring patients understand what is safe We tailor input to the needs of a patients and what is important to them to support them to make changes in their lives Our role is with patients and we only have occasional, informal contact with families if the patient consents.

Appendix 2.7: Extracts from Reflective Log

“I am struggling with the thought during interviews about getting the “right” answers from participants to be able to answer the research questions. I am aware that IPA is not about receiving the correct information and there is no hypothesis however it is difficult when being assessed on the research not to worry that maybe the information will not allow me to do this. I think having the interview schedule and adapting this as needed with included prompts helps to manage this.”

“I have noticed that the skills I use in therapeutic assessments to gain information from patients are similar to the skills needed in qualitative interviews, for example reflecting and summarising which often prompts participants to prove more information.”

“When reading the transcripts, there a lot of points that I can see I could have asked for more information, or an example from participants. This is frustrating, especially when I know IPA requires a depth and quality to the data. It is something I will keep in mind for the future to ensure I am getting the most information from participants through prompting them.”

“I am aware that I am feeling nervous about the analysis process as qualitative research is new to me. I have worries about interpreting the data in a way that is representative of participants narratives but also is in keeping with IPA processes. I have benefited a lot through supervision with Naomi to be able to discuss the stages of analysis and reflecting on the information I have bracketed, and this will be a huge loss when she leaves.”

“Throughout the IPA process it is hard to not make comparisons between participants and look for themes. It is clear there is a focus towards person centred care however less so for TIP. It is important to continue to bracket any of my own thoughts, questions and theories throughout and discuss these in supervision. I also want to discuss how these relate to the IPA process and when they may be relevant as this is not clear to me from the IPA literature.”